



**LUNDS UNIVERSITET**  
Lunds Tekniska Högskola

# Anti-shrink packaging

- A case study for improved anti-shrink packaging -

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## **Acknowledgements**

This report is the concluding part of my education to achieve a master degree in engineering at Lund Institute of Technology, Lund University, Sweden. This master thesis has been conducted in co-operation with the Division of Packaging Logistics at the Department of Design Sciences at Lund Institute of Technology and SCA Packaging in Belgium.

I would like to take this opportunity to dedicate a special thanks to Ben Blydenstein at SCA Packaging for making it possible for me to participate in the anti-shrink packaging project and for his support during my work. Also a special thanks to Mats Johnson at the Division of Packaging Logistics, Lund Institute of Technology, for his source of inspiration and useful inputs.

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*October 2008, Lund, Sweden*

Victor Heyden

## Abstract

**Title:** Anti-shrink Packaging – A case study for improved anti-shrink packaging

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**Purpose:** The purpose of this project is to contribute to the development of anti-shrink packages in order to reduce the level of shrinking in the FMCG business. Furthermore, the report will point out the requirement in order to succeed with the desired shrinkage reduction and display the ongoing work. The report is the first part to a larger study initiated by the ECR Europe shrink group developing anti-shrink packaging guidelines.

**Objectives:** For the report three objectives have been chosen together with SCA Packaging, Lund University and the ECR Europe Shrink group:

- Understanding the current flow of product from point of manufacturing through to point of sales and the vulnerabilities to shrink along this journey.
- Gather data and information on current investments made at all points in the supply chain to address the shrink problem
- Identify opportunities for shrinkage improvements through innovations in packaging.

**Methodology:** Based on the author's limited knowledge within the area of shrinkage, at the commencement of the project, an abductive approach was chosen. Through a broad scanning of available theories and data a theoretical framework was developed. The project was then carried on with a multi-case study, the supply chain walks, collecting qualitative data from involved companies through interviews and on-site observations.

**Conclusions:**

The issue of shrinkage, which cost the fast moving consumer goods industry billions of Euros every year, are definitely a problem which is taken more and more seriously among the involved companies. During the study, most shrink related problems have been found at the retailers, which unfortunately could be linked to products getting in contact with customers. This definitely does not mean that it is a retailer problem. However, I believe that the retailers have to accept that it is within their part of the supply chain the biggest problems occur. From the manufacturers point of view it is important not to just accept the situation. They need to understand the problems their products are exposed to and constantly working with improvements to support the retailers and to simplify the handling process. Co-operation and communication is vital, in the work against shrinkage, preventing situations where ad hoc actions are implemented only driving further complexity into the supply chain. Moreover, I have identified a lack of numerical data for analysing the effect of the measures taken. Today products particularly vulnerable to shrinkage, so called hot products, are often treated especially along the supply chain and in store. The special treatment involves actions from external security for example security tagging, safer boxes or plastic wrapping to special handling for example special strategies in picking, loading, distribution and storage. From an anti-shrink packaging point of view, a good package should contain one single easy identified product; the package should be robust and slightly bigger than needed and interact with current anti-theft equipments. Best examples, regarding the involved products, are the blister packages and the plastic wrapping, but both need further development. Based on the information gathered, through the supply chain walks, next generation anti-shrink packages should be a source tagged package fulfilling the above requirements but also user friendly, cost effective and harmless to the environment. Last but not least I believe that companies in the FMGC business sometimes should focus more on preventing the opportunity of shrinkage instead of focusing on the technologies to prevent shrinkage.

**Key words:**

shrinkage, anti-shrink packaging, anti-shrink features, SCA packaging, ECR Europe, packaging guidelines, anti-shrink measures, stock loss

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## 1 Introduction

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*The purpose of this chapter is to provide the reader with a brief background to the area of research. It gives a short introduction to the initiator of the project and the area of investigation and describes and explains purpose, objectives and delimitations of the thesis. The chapter ends with a description of the target group and an outline of the report.*

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The issue of shrinkage costs the fast moving consumer goods, FMCG, industry billions of Euros every year. With increased competition in the market and a constant search for higher profitability the shrinkage problem has been pointed out as an area of improvement, by both manufacturers and retailers. A CEO from a major retailer organisation has actually stated the shrinkage issue as “the last free money on the table”<sup>1</sup> for the FMCG business. In this report the focus is set on anti-shrink packaging and by following five high shrink products mostly from the health and beauty segment, one of the areas with the highest level of shrinkage, interesting shrink related information will be collected and presented.

Most work done within the area of shrinkage, in the fast moving consumer good business, has focused on the nature and extent of shrinkage, raising awareness about the problem. The existing reports are pointing out the potential affects a reduction of shrinkage could have to the industry and how to obtain this. In addition, the reports provide useful benchmarks for organisations to compare their performance on shrinkage against other companies in the business.

In light of this, the ECR Europe Shrink group, a joint trade among companies in the FMCG business, has identified a need for a more specific report, in the area of shrinkage, which will result in a development of a common set of anti-shrink packaging guidelines. The objectives of this guideline is to help educate packaging managers about the anti-shrink technologies used today, which often are attached to the product, or potential anti-shrink features that could “design out” shrinkage problems in the future. As a packaging company and member of the ECR shrink group SCA packaging has been responsible for leading the initial phase of this project, collecting up-to-date information from the industry through a set of supply chain walks. The outcome from the supply chain walks will correspond to as the basic findings of this report.

Shrinkage is a complex area causing problems for retailers and manufacturers every day. Problems associated within the area of packaging related shrinkage could for example be; when shoppers open the package in the store to identify the product and leave the tampered package on the shelf or when the contents of the package are stolen in the store. Through this report the reader will obtain information both regarding on going anti-shrink work in the industry, preventing this from happened, and futures ideas on how the level of shrinkage could be decreased.

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<sup>1</sup> Kenneth Bengtsson, CEO ICA, 2008-09-02

## **1.1 Industry of investigation**

The fast moving consumer goods, FMCG, business sector is an enormous business and highly complex with many manufactures, having logistics channels covering all of Europe, and retailer companies with a product range over 40000 store keeping units, SKUs. The product assortment includes a wide range of frequently purchased, essentials or non-essentials, consumer products for example health and beauty, soft-dink and food products that are sold quickly with relatively low profit margin. Together the section had a combined market turnover of €1004 billion<sup>2</sup> in 2004. Still it is highly competitive, driving manufactures and retailers to constantly seek new methods to increase there profitability. In this drive to constantly searching for new methods the shrinkage problem had become an important issue and an area which many companies presume great saving potentials in.

## **1.2 Supporting organisations**

### **1.2.1 ECR Europe organisation**

The ECR, Efficient Consumer Response, is a joint trade that began in the mid-nineties and was initiated by the emergence of new principles of collaborative management along the supply chain. There was a need and understanding that companies could serve consumers better, faster and at less costly by working together with trading partners. The organisation has four focus areas; demand management, supply management, enablers and integrators that together form the basis of the Global scorecard that will help companies explore the potential of working together. The organisation exists of an overall European organisation and national ECR initiatives. Every year the organisation organizes difference projects. Participation in these projects, at European or national levels, is open to large and small companies in the grocery and fast moving consumer goods sectors which including retailers, wholesalers, manufacturers, suppliers, brokers and third-party service providers such as logistics operators.<sup>3</sup>

Since 1999, a special section within the ECR organisation has focus on stock loss, ECR Europe shrink group. The group are created to meet the needs of retailers and manufacturers who want cutting edge knowledge to tackle the massive and ongoing costs of shrinkage. The shrinkage group are constantly improving and have today become a respected research and policy development forum in the FMCG industry, helping retailers and manufacturers to save approximately €650 million over the past 8 years.<sup>4</sup>

### **1.2.2 SCA Packaging**

As mention above in the introduction, SCA packaging is a member of the ECR Europe shrink team and is leading the initial work of this report. The objective for this initiative is to find measures that could “design out” shrinkage through better and smarter packages.

For SCA, it all started back in 1929 when SCA was founded through a merger of some ten Swedish forest companies. Back then it was just a pure forest company but since then it has developed and today the SCA group is a global consumer goods and paper company that develops, produces and markets personal care products, tissue, packaging solutions and solid-wood products. In 1991 SCA

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<sup>2</sup> Shrinkage in Europe, p. 1,2004 , Beck A

<sup>3</sup> ECR Europe, 2008-06-27

<sup>4</sup> ECR Europe, 2008-06-27

Packaging is officially installed as a SCA Business Group and since 1994 they have their head office in Belgium.

Today SCA Packaging is a full service packaging provider that offers their customers customer-specific packaging with a state-of-the-art design. The mission of SCA Packaging is to provide their customers with increasing added value through better and smarter packages. Within their portfolio you can find transport, consumer and display packaging, customised protective packaging, industrial packaging and heavy duty. SCA packaging is currently spread over more than 30 countries worldwide and sales in 2007 amounted to EUR 11.4 billion<sup>5</sup>. SCA packaging had approximately 23,500 employees<sup>6</sup> at the beginning of 2008 and SCA shares are traded on the Stockholm and New York stock exchanges.

### **1.3 Purpose**

The purpose of this project is to contribute to the development of anti-shrink packages guideline in order to reduce the level of shrinking in the fast moving consumer goods business. Through supply chain walks, following selected products, up to date shrink measures and ideas of improvements have been collected. The report will also try to point out the requirements along the supply chain in order to succeed with a reduction of shrinkage. This report is the initial part to larger study, anti-shrink packaging guideline, presented in the first quarter of 2009 by the ECR Europe.

### **1.4 Objectives**

The objectives of this master thesis are:

- Understanding the current flow of product from point of manufacturing through to point of sales and the vulnerabilities to shrink along this journey.
- Gather data on current investments made at all points in the supply chain to address the shrink problem.
- Identify opportunities for shrinkage improvements through innovations in packaging.

### **1.5 Delimitations**

The delimitations of the project are presented in the following list in order to further clarify my scope and focus.

- The focus will be on the chosen products from the chosen manufacturers and retailers.
- The anti-shrink features should be linked to the actual package or the handling process of the packaging.
- I will not propose specific packaging design solutions to SCA packaging, but general anti-shrink features.
- I will not implement the proposed solutions, just present the collected information.
- All anti-shrink features will be disregarding the cost of implementation.

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<sup>5</sup> SCA packaging, Facts and figures 2007, 2008-07-10

<sup>6</sup> SCA packaging, Facts and figures 2007, 2008-07-10

## **1.6 Target group**

The target group identified for this report is SCA packaging, retailers and manufactures in the FMCG industry that are members in the ECR Europe anti-shrink project. Moreover, I also address this report to students with basic logistic knowledge that which to get a deeper understanding about the shrinkage problem.

## **1.7 Outline of the thesis**

The objective of this section is to provide a road-map to this master thesis, explaining the structure and contents of the different parts involved.

*Chapter 1* starts with a brief introduction to the subject matter and the industry of investigation. It is followed by a description of the project purpose, objective and delimitations.

*Chapter 2* will guide the reader through the metrology used in the report and motivate choice of research method, model and data collection technique. The chapter end with a discussion regarding the credibility of the study.

*Chapter 3* aims to introduce the reader to the subject of shrinkage and anti-shrink packaging together with surrounding topics vital to understand the complexity and problems the industry is dealing with.

*Chapter 4* is the main part of the report. In this chapter the findings from the supply chain walks are presented. Information regarding strategies, level of shrinkage, packaging features and design and results will be presented. Everything is backed up with pictures taken at the different visits.

In *Chapter 5* the findings from chapter 4 is analysed. The overall shrinkage situation in the industry is discussed together with a more focused section regarding anti-shrink packaging. The chapter ends with a short analyse of the supply chain.

*Chapter 6* presents the conclusions of the findings, based on the gathered information from the supply chain walks, and recommendations to the industry. It ends with ideas and examples about future studies within the shrinkage subject.

The report ends with *chapter 7 and 8* involving used referenced and an appendix with company questions.

## 2 Methodology

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*This chapter presents the scientific approach, research methods and data collection techniques selected for this study. Each topic begins with a theoretical framework and then ends with my approach to the subject matter. In the concluding part of the chapter the credibility of the study are also discussed.*

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### 2.1 Research approach

When initiating a research project it is important to have a well thought through research strategy, thus choose the right methodology approach. The methodology should be seen as a tool to plan the research work, both concerning the time schedule and the necessary activities. The work is often limited by recourses, i.e. time or money, which make it important to choose the best suited strategy for the work considering the limited resources. Consequently, this part of the report will describe important research methods and facts to consider when both writing and analysis the results.

### 2.2 Research methods

#### 2.2.1 Inductive, deductive, and abductive methods

There are different methods of observing and understand the relationship between the theoretical and empirical world. The different methods can explain the different procedures chosen to collect, structure and analyse data and thereby even affect the result in the end.

The inductive method is based on data collection of the reality in which the author prematurely has made no assumptions. Thereafter, generalized and theoretical conclusions on reality are made. The advantage of this method is that the author is impartial to the work and not influenced by own values in the area. At the same time, it will be difficult to limit the study and know how much information needed to describe reality.<sup>7</sup>

The deductive method assumes that the author even before the study start has a perception of the reality which will be studied. The perception creates a hypothesis which then is tested and verified through empirical studies. The advantage with a perception of the reality is that the study can more easily be limited and that new theories could be developed. This leads to the scientific process continues easier. The disadvantage of the deductive method is that the author even before has a preconceived opinion, by using existing theories, and thus consciously or unconsciously will be affected.<sup>8</sup>

Abduction method is a combination of the two earlier mentioned approaches. It is similar to the inductive approach in the sense that it originates from an observation in the empirical world, whereupon a theory to match that observation is searched for. However, instead of moving from the empirical to the theoretical world or vice versa this approach circulates between the two levels. The advantage of this method is that it gradually built up a theoretical model as it is reviewed in several steps. The disadvantage, however, is that the method is time-consuming.<sup>9</sup>

For this paper, I have chosen an abductive approach, due to the limited knowledge within the problems associated with shrinkage before the commencement of this study. The project was

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<sup>7</sup> Wallén, 1996, p. 49

<sup>8</sup> Wallén, 1996, p. 49

<sup>9</sup> Wallén, 1996, p. 49

initiated by a broad scanning of available theories and data in order to set up a theoretical framework. This was later used for structuring the gathering of empirical information. However, to follow up on the observations made I returned to the theory to complement the initial framework with new inputs.

## **2.3 Research model**

### **2.3.1 Qualitative vs. Quantitative study**

There are two comprehensive approaches to the research taking place; qualitative and quantitative. If the information from a study can be measured or evaluated numerically, it is said to be quantitative. This type of method requires more specific knowledge and is performed in a purpose of comparison. The data collection is often done through surveys and utilisation of mathematical models. For a quality approach, the performed study has an objective to create a deeper knowledge in a specific area, about a specific problem or situation. This type of method is often associated with research studies of smaller scale and the data collection is made up primarily of text material, interviews and observations.<sup>10</sup>

In order to present facts and features that would help the FMCG business reduce there stock loss I have chosen a qualitative research approach. This approach is also advantageous when it comes to investigate different products at different markets, as in this case with the supply chain walks. A limited amount of quantitative data was collected but was hard to compare. For the case studies, interviews and on-site observations were referred before surveys. This since the aim was to gain deeper understanding of the shrinkage problems and measures taken or planned.

## **2.4 Data collection**

### **2.4.1 Primary and secondary data**

For the collection of data there are two main groups; primary and secondary data. Primary data, meaning the information is gathered to be used for a specific study through questionnaires, observations and interviews. For secondary data the information was initially gathered for another purpose and could be found in literature including books, journals and so on. When it comes to the secondary data it is important to have in mind that the information could be based or intended for another purpose than desired.<sup>11</sup>

Literature studies have the advantage of providing much information fast and to a low cost. It gives an idea of current knowledge and research in the area. The disadvantage is that the source of information, the methods used and the purpose, are not always presented. How well the information suits the study should therefore always be considered. Interviews have the advantage of providing primary data relevant to the study through direct questions. It also gives the opportunity to adapt the questions to the individual correspondent and gives a deeper understanding. On the other hand, interviews are time consuming and personnel opinions have to be considered.<sup>12</sup>

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<sup>10</sup> Merriam, 1994, p.32

<sup>11</sup> Björklund & Paulsson, 2003, p.63

<sup>12</sup> Björklund & Paulsson, 2003, p.63



In this study secondary data such as publications and journals were initially used to gain a better understanding of the work in the field, including the current research. The secondary data was then followed up by a multi-case study on selected products, the supply chain walks, from supporting companies in the ECR group.

## **2.5 The Supply Chain Walks**

In order to collect the up-to-date information needed for this study, about the ongoing anti-shrink work, a set of supply chain walks were performed. The walks were done among supporting companies in the ECR Europe shrink group following selected products from point of manufacturing to point of sales. Along the walks, interviews were made with key members of staff particularly head of loss prevention, members within their team and in some cases also on-site working employees. At each visit semi-structured interviews were completed and extensive notes were taken. In order to prepare for the interviews a discussion guideline with a series of questions was sent out in advance to each key member. However, during the interview if the respondent had facts and thoughts not covered by the discussion guidelines the information was still considered as important and included in the report. To get a deeper understanding to the asked questions and to map the actual handling process, of the selected products, on-site observations were made along each supply chain. The visited places were selected by each company involving DC, store and re-packing centres. At the visits, where I received permission, pictures were also taken to contribute to the collected information.

The initial contact for each company, within the study, was presented by the ECR Europe shrink group and had been selected among supporting companies. Each person was then contacted by emails and phone calls to set a date for the supply chain walk. In most cases the visits were organized by a secondary contact involved in the loss prevention team. All Supply Chain Walks were carried out between June and October 2008.

The findings from these supply chain walks will together with the information from the literature studies serve as conclusions on this report.

## **2.6 Credibility of the study**

### **2.6.1 Validity, reliability and objectivity**

According to research methodology there are three important sources of criticism to consider; validity, reliability and objectivity.<sup>13</sup>

Validity refers to what extent the study actually measures and what is intended to measure. The validity can be improved by using more than one method to examine the same phenomena and thereby create different perspectives. This technique is called triangulation and can be used by applying more than one source of information, having several persons evaluating the material or using different theories to the same set of data.<sup>14</sup>

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<sup>13</sup> Björklund & Paulsson, 2003, p.63

<sup>14</sup> Björklund & Paulsson, 2003, p.63

For this paper, the method of triangulations has been adopted using interview from several companies and written sources. The companies taking part in the study had all great interest in the shrinkage problem and a strong willingness of reducing stock loss.

Reliability is the degree of trustworthiness in the measuring instruments used; the objective is that repeated studies will give the same results. The reliability also has to do with how the data are collected and analysed in order to oversee random variation. Control questions in interviews, questionnaires and triangulation are ways to increase the reliability of a study.<sup>15</sup>

Once again, the interest of the participating companies should result in a high reliability. Furthermore, the supply chain walks was made on five different SKU in order to get accurate information.

Objectivity is to what extent personal prejudice affect the study and it is therefore important to show the reader how decisions are motivated. The source must be quoted so that the facts are correct and the selection of facts must not be distorted in order to reinforce the point of view emphasised by the researchers.<sup>16</sup>

In this paper, the purpose and objective was approved by the ECR organisation, on which no personnel company interest could get any special treatment. Furthermore, the author's limited knowledge of the FMCG business and the ongoing problem with shrinkage should even increase the objectivity. However, the fact that each company participating in the supply chain walks have there own interest in increased profit within there part of the supply chain may or may not have affected the objectivity of the questions answer and facts presented.

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<sup>15</sup> Björklund & Paulsson, 2003, p.63

<sup>16</sup> Björklund & Paulsson, 2003, p.63

### 3 Theoretical framework

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*This chapter deals with the theory relevant for analysing the empirical finding of this report. In the chapter the reader will be introduced to the shrinkage subject and the basic knowledge surrounding the topic. At the end of the chapter some known shrink reduction strategies are presented.*

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In order to structure the chapter in a way that aims to explain the interfaces and the connections between the different areas of shrinkage I have chosen to divide the theoretical framework it into three levels, see figure 1.

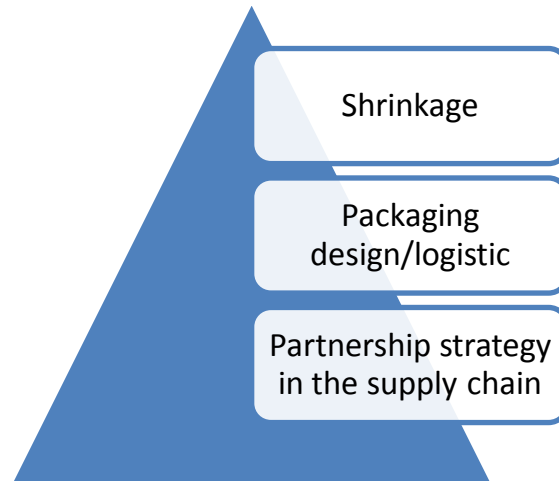


Figure 1, The fundamental stages of anti-shrink packaging.

The three levels, shrinkage, packaging design/logistic and partnership strategy in the supply chain, represent the main focus areas of this theory chapter. These three levels are chosen in order to provide the reader with the basic knowledge of the shrinkage problem and the basic understanding how the chosen areas are connected and affecting each other. Since the primary target of this thesis is to reduce shrinkage through a better and smarter package the overall focus will be set in this area. However, without an understanding regarding the whole supply chain and the effect of implemented measures, the whole effort of reduce shrinkage could be useless. In order to illustrate this, the supply chain strategy is placed as a ground level of knowledge, in the pyramid above, and then the knowledge surrounding the topic of anti-shrink packaging is narrowed down to the top level of the pyramided. On the other hand, for an enhanced understanding the chapter starts at the top level and then proceed downwards.

To manage a reduction of shrinkage it is important to obtain an understanding about the actual problem. Shrinkage is a complex dilemma that can be found in every business and every supply chain a round the world, resulting in different focus and treatment depending on the chosen problem priority. As this report I focusing on the FMCG industry the first part of the theoretical framework will try to establish a clear definition of shrinkage and the size and awareness among the different organisations in this business.

The second level, packaging design and logistics, will discuss the role of the packaging in the work to reduce shrinkage. The primary focus will be on aspects and decisions concerning the design of a package and logistics issues, lists of known features will be presented. Some environmental aspects

will be presented even though it is not fully within the focus, mostly because the ongoing climate discussion where a package not only should help reduce shrinkage, it should also be environmental friendly.

The third level, the ground level, describes the partnership strategies in the supply chain and the theory regarding traditional and supply chain management approach. It is important to remember that shrinkage is a cross-functional problem that involves the entire supply chain. In other words, it is vital that all involved partners understand the measures taken and develop a common “language” associated to shrinkage.

Last but not least, the chapter will end with some examples of theories and tools on the market today in order to reduce the shrinkage problem.

### 3.1 Shrinkage

#### 3.1.1 Definition of shrinkage

In order to solve the shrinkage problem a clear definition is needed. Since the problem could be found within every business and supply chain the word shrinkage has also been defined in several different ways, considering which business discussed. It does not get any better by the fact that it is a complex problem that is hard to measure. To unite retailers and manufactures, in the FMCG business, the ECR Europe shrinkage group has worked out a definition that has been accepted and is now in-use when trying to reduce the stock loss. The ECR Europe shrinkage group divide shrinkage into four major categories, further presented below.

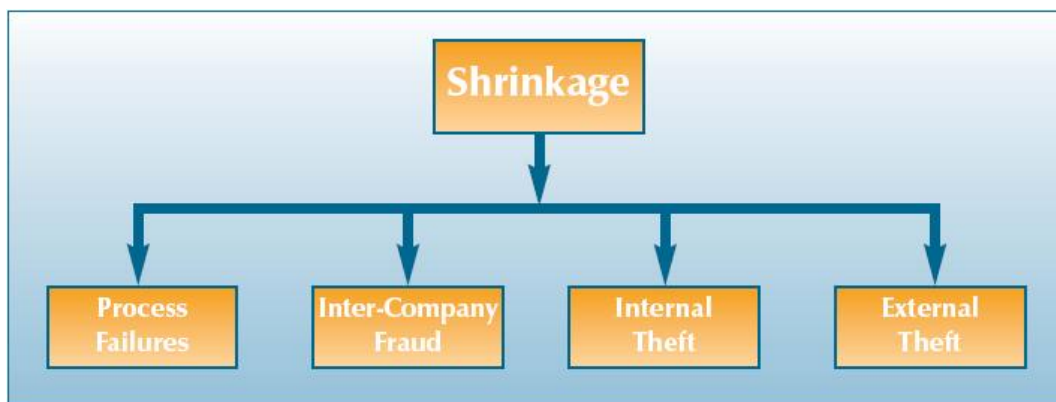


Figure 2, The ECR definition of shrinkage in the FMCG business.<sup>17</sup>

Process failures, refers to losses due to operating procedures within the organisation including products which have gone out of date, or have been reduced in price, incorrect pricing and product identification errors. Examples of this could be incorrect stock counting, products which have been damaged during picking, scanning errors and errors in deliveries to the stores.<sup>18</sup>

Inter-company fraud, are losses due to suppliers or their agents deliberately delivering fewer goods than retailers or manufacturers are eventually charged for, or retailers deliberately returning fewer

<sup>17</sup> Shrinkage, p. 5, 2003, Peacock C & Fonteijn J

<sup>18</sup> Shrinkage in Europe, p. 3,2004 , Beck A

goods to manufacturers or suppliers than specified. For retailers the problem refers to losses due to discrepancies.<sup>19</sup>

Internal theft, the illegal taking of goods or cash from a store or manufacturing site at any time of the day or night by staff employed by the company, including contract staff for instance third party security staff or maintenance workers. In addition, this includes staff theft referring to collusion between customers and staff, employees eating stock to shortages and the deliberate manipulation of prices.<sup>20</sup>

External theft, as for internal theft above this refers to the unauthorised taking of goods or cash from store or manufacturer but in this case by customers or other non-company employees. Including in this are incidents of shoplifting, fraudulent return of goods, till snatches and burglary, breaking and entering a store whilst it is closed.<sup>21</sup>

### 3.1.2 Shrinkage in FMCG business

In order to unite the industry in the work to reduce shrinkage it is also important for the companies in the FMCG business to understand the content and source of the problem. Today the problem is often crisis driven and only prioritised when significant damage has happened. In addition, most solutions implemented to solve the problems are done unilaterally by one part in the supply chain without considering the impact it could have on other groups, both up stream and down stream in the supply chain.

### 3.1.3 Size of the problem

In a survey, by the ECR Europe shrinkage group, among retailers and manufactures in the FMCG business in Europe from 2004 covering 26 countries, see figure below, an estimation of the size of the problem and the possible savings the business could obtain if the start tackling the problem are presented.

Sector	Percentage stock loss	Value (€ billions)
Retailers	1,84	18,49
Manufacturers/Suppliers	0,57	5,68
Total	2,41	24,17

Figure 3, Results from the ECR survey from 2004.<sup>22</sup>

The numbers in the table are based upon the companies in the survey that was asked to indicate the value of their stock loss as a percentage of total sales for the last complete financial year. Important though, that even if the numbers presented in the table above reveals that the biggest problem is the retailers, many problems might be “washed down” through the supply chain and does not affect the actual source of the problem.

This survey is concentrated on the European market but corresponds well to the other surveys done around the world. The University of Florida found out that for 2001 the average shrinkage for

<sup>19</sup> Shrinkage in Europe, p. 3,2004 , Beck A

<sup>20</sup> Shrinkage in Europe, p. 3,2004 , Beck A

<sup>21</sup> Shrinkage in Europe, p. 3,2004 , Beck A

<sup>22</sup> Shrinkage in Europe, p. 7,2004 , Beck A

retailers in the US market was 1.87%<sup>23</sup> of sales value. Another survey from 2001-2002 done by ECR Australia found out an average shrinkage rate in there industry of 1.73%<sup>24</sup> of retailers sales value.

A recently performed international survey, Global Retail Theft Barometer 2008, done by the Centre of retail research is presented below in figure 4. In this survey information about retailer shrinkage have been collected from 36 countries around the world, including 920 of the largest retail corporations with a combined sales of \$814 billion.<sup>25</sup>

Global Retail Shrinkage 2007		US DOLLARS		
	Total Shrinkage 2007	Shrinkage (as % of sales)		Percentage change
All values in U.S. \$	U.S. \$ million	2007	2006	2006-2007
<b>NORTH AMERICA</b>				
Canada	\$3,532	1.45%	1.49%	-2.7%
United States	\$438,806	1.48%	1.52%	-2.6%
<b>Average N. America</b>	<b>\$42,338</b>	<b>1.48%</b>	<b>1.52%</b>	<b>-2.6%</b>
<b>LATIN AMERICA</b>				
Argentina	\$714	1.48%	1.46%	1.4%
Brazil	\$2,143	1.52%	1.49%	2.0%
Mexico	\$2,920	1.68%	1.68%	0.0%
<b>Total Latin America</b>	<b>\$5,777</b>	<b>1.60%</b>	<b>1.59%</b>	<b>0.6%</b>
South Africa	\$718	1.59%	1.53%	3.9%
<b>Total Africa</b>	<b>\$718</b>	<b>1.59%</b>	<b>1.53%</b>	<b>3.9%</b>
<b>ASIA-PACIFIC</b>				
Australia	\$2,051	1.42%	1.39%	2.1%
India	\$2,543	3.10%	2.90%	6.9%
Japan	\$9,365	1.01%	1.04%	-2.9%
Malaysia	\$256	1.53%	1.48%	3.4%
Singapore	\$173	1.21%	1.25%	-3.2%
Thailand	\$1,017	1.59%	1.65%	-3.6%
<b>Average Asia-Pacific</b>	<b>\$15,405</b>	<b>1.20%</b>	<b>1.24%</b>	<b>-3.2%</b>
<b>EUROPE</b>				
Austria	\$632	1.01%	0.94%	7.4%
Belgium/Luxembourg	\$1,131	1.36%	1.33%	2.2%
Denmark	\$500	1.20%	1.20%	0.0%
Finland	\$559	1.30%	1.32%	-1.5%
France	\$6,481	1.37%	1.34%	2.2%
Germany	\$6,863	1.13%	1.10%	2.7%
Greece	\$691	1.32%	1.36%	-3.0%
Ireland	\$609	1.36%	1.33%	2.2%
Italy	\$4,372	1.28%	1.23%	4.1%
The Netherlands	\$1,555	1.20%	1.24%	-3.2%
Norway	\$596	1.28%	1.26%	1.6%
Portugal	\$470	1.26%	1.31%	-3.8%
Spain	\$3,686	1.31%	1.28%	2.3%
Sweden	\$881	1.35%	1.32%	2.3%
Switzerland	\$841	1.01%	0.96%	5.2%
United Kingdom	\$7,414	1.30%	1.34%	-3.0%
<b>Average Western Europe</b>	<b>\$37,281</b>	<b>1.26%</b>	<b>1.25%</b>	<b>0.8%</b>
Czech Republic	\$479	1.38%	1.41%	-2.1%
Hungary	\$465	1.38%	1.36%	1.5%
Poland	\$1,620	1.36%	1.34%	1.5%
Slovakia	\$179	1.32%	1.30%	1.5%
Baltic States	\$267	1.35%	1.42%	-4.9%
<b>Average Central Europe</b>	<b>\$3,010</b>	<b>1.36%</b>	<b>1.36%</b>	<b>0.0%</b>
<b>Total Europe</b>	<b>\$40,291</b>	<b>1.27%</b>	<b>1.26%</b>	<b>0.8%</b>
<b>TOTAL GLOBAL</b>	<b>\$104,529</b>	<b>1.34%</b>	<b>1.36%</b>	<b>-1.5%</b>

Figure 4, Statistics from Global Retail Theft Barometer 2008.<sup>26</sup>

<sup>23</sup> National retail security survey, p 3, 2001, Hollinger R & Davis J

<sup>24</sup> A guide to collaborative loss prevention, p.6, 2002, Bruce Grant et al

<sup>25</sup> Retail theft barometer 2008, 2008-11-14

<sup>26</sup> Retail theft barometer 2008, 2008-11-14

The problem get even more interesting if you start investigate the impact these numbers has got on the total corporate results. In 2003 another ECR survey among 25 European supermarket chains revealed a stock loss percentage of 1.75%<sup>27</sup> of turnover. At the same time the survey showed that the average profit margin was 3%<sup>28</sup> in the business year 2000. This means that if the sector manage to halve the cost of shrinkage they could almost increase there growth by one-third percent, see figure 5 below.

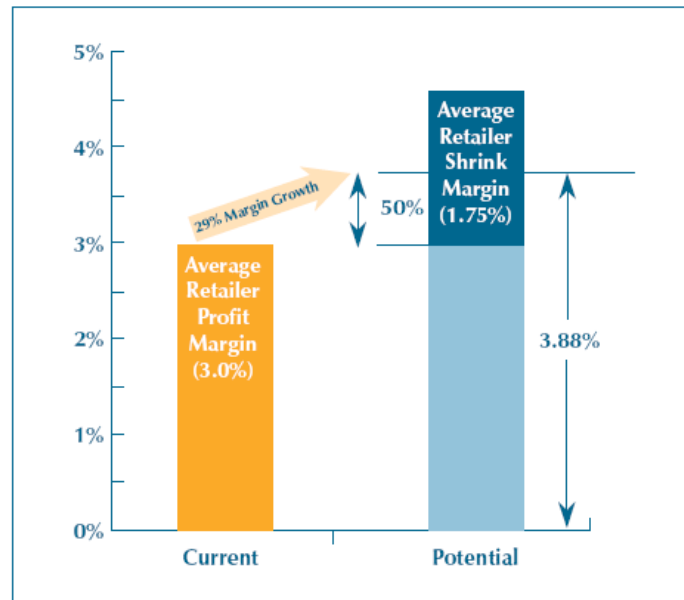


Figure 5, The opportunity for margin growth.<sup>29</sup>

### 3.1.4 Awareness of the problem

One explanation to the numbers showed above and the actual potential in increased growth is the lack of awareness of the shrinkage problem. The study done by the ECR in 2004 also showed that it is only around 49%<sup>30</sup> of the losses that are known losses to the organisations, which involve 51%<sup>31</sup> of the stock losses are still unknown. Surprisingly the organisations has got no or little idea as to where, when or how most of there products were lost. Consider the losses, known and unknown, the company taking part in the ECR survey were asked to estimate the percentage of stock loss from each of the potential sources, process failure, internal and external theft and inter company fraud, both for all losses and then for the actual known losses. The numbers will be very much an estimation from the respondents, based as much upon personal reference as on hard facts. Still it can provide some ideas on the key causes of stock loss.

<sup>27</sup> Shrinkage, p. 5, 2003, Peacock C & Fonteijn J

<sup>28</sup> Shrinkage, p. 12, 2003, Peacock C & Fonteijn J

<sup>29</sup> Shrinkage, p. 13, 2003, Peacock C & Fonteijn J

<sup>30</sup> Shrinkage, p. 6, 2003, Peacock C & Fonteijn J

<sup>31</sup> Shrinkage, p. 6, 2003, Peacock C & Fonteijn J

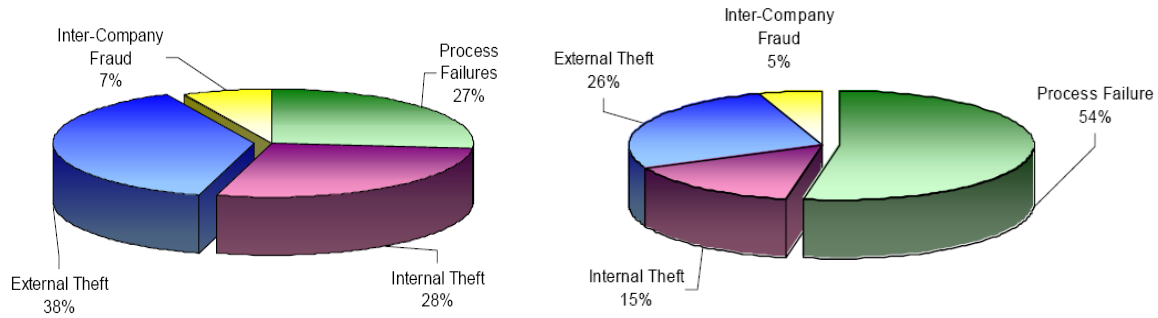


Figure 6, Causes of stock loss in the retailer sector, all losses and known losses.<sup>32</sup>

The results from this study shows that companies have got best control over the losses due to process failure, right diagram above. Not a very surprising result, since it quite easy to identify losses like wrong delivery or damages products during picking but what is surprising is that this together with known internal theft corresponds to 69% of the losses. All these losses are within the companies' own supply chain and still the problem is not taken seriously and the matter has not been taken care of. In fact most of the theft solutions used today is focusing on the external theft problem. Consider the left diagram, all losses known and un-known, the companies believe that theft is the number one reason to the huge number of stock loss that appear. Still the most problems are estimated to be within there own organisation, 55%.

Another survey, global retailer theft barometer, is also investigating the awareness of the source of shrinkage. In this survey, seen below, the losses are divided into the category; customer theft (shoplifting), employee theft, supplier-vendor theft and internal errors. Also in this case theft is the number one reason, but interesting to note in this case is the difference between the continents regarding the main source of shrinkage.

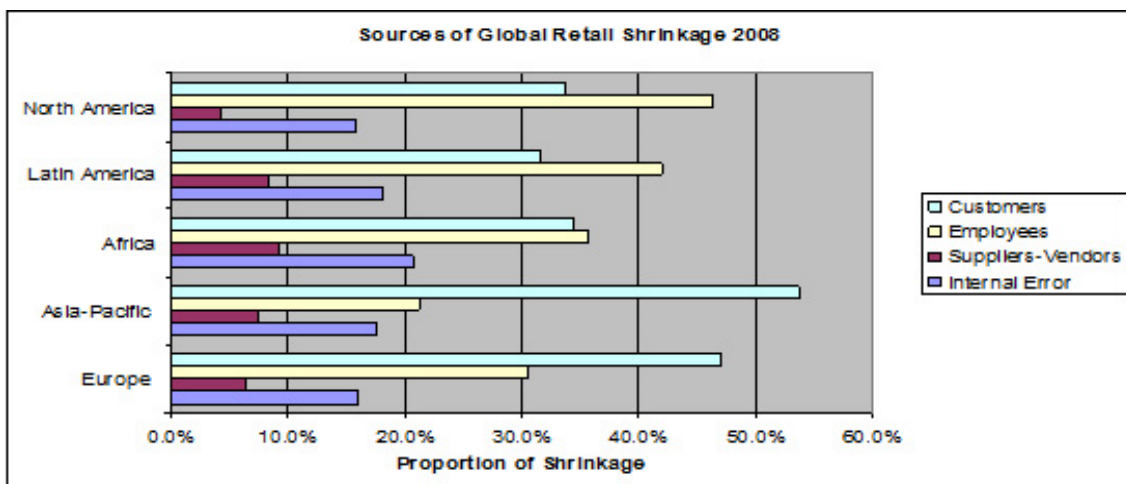


Figure 7, Source of retailer shrinkage, based on Global Retail Theft Barometer 2008.<sup>33</sup>

<sup>32</sup> Shrinkage, p. 7, 2003, Peacock C & Fonteijn J

<sup>33</sup> Retail theft barometer 2008, 2008-11-14



## 3.2 The packaging concept

### 3.2.1 The role of the packaging

In the work of reducing shrinkage through a smarter package, it is important to consider and understand the complexity of the design and logistics aspects linked within packaging development.

The package has an important role within the supply chain. Today the package is seen as an important part of the logistic process and not something just for product protection. In order to get the packaging system to work well along the whole supply chain, obtain an effective flow of products from manufacturing to customers, it is important to get an early general overall overview and identify necessary standards. During the supply chain from producer to end customer there are a number of different participants, all with their special requirements on the package. It will be impossible to satisfy all the needs, some are contradictory and involves the considering of the pros and cons and others are in accordance with each other. This chapter will discuss the different requirements set on a package as well as the cost and environmental issues.

### 3.2.2 Definition of packaging

Since the view on packaging has changed to be considered as a part of the logistic chain an up-date about the actual packaging definition are necessary. Through the literature survey a couple of definitions of packaging were found.

*“A coordinated system of preparing goods for transport, distribution, storage, retailing and end-users.”<sup>34</sup>*

*“All products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer. “Non-returnable” items used for the same purposes shall also be considered to constitute packaging.”<sup>35</sup>*

### 3.2.3 Packaging logistics

The concept of packaging logistics is to be considered as an integrated co-ordination in which the logistical system and the packaging systems interact, complement as well as adapt to each other. The actual package should facilitate the handling, transportation and storage process and the interface between the subsystems along the logistic channel.

A holistic approach is an important aspect, as the aim is to improve the entire integrated system and not only a limited part of it. For example, making an improvement only regarding the packaging system without considering the logistical system may have a negative effect for the total system.

A definition well adapted to the subject is the one below from Saghir<sup>36</sup>.

*“The process of planning, implementing and controlling the coordinated packaging system of preparing goods for safe, efficient and effective handling, transport, distribution, storage, retailing,*

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<sup>34</sup> Packaging logistics – a value added approach, p 37, 1998, Johnsson M

<sup>35</sup> Logistikens grunder, p482, 1998, Lumsden K

<sup>36</sup> Packaging Logistics Evaluation in the Swedish Retail Supply Chain, p 39-45, 2002, Saghir M

*consumption and recovery, reuse or disposal and related information combined with maximizing consumer value, sales and hence profit.”*

The logistical process, in view of the package, could be divided into three systems, each with different stress on the package that the package developers need to consider. In this case the systems are based on the risks for damages packages or the damages that could arise. The three systems are based on the definition from Lumsden.<sup>37</sup>

- Controlled system – These transports are often done by the companies own transportation units and in company registered vehicle. The risks and degree of difficulty of the damages could easy, at least in theory, be controlled by the company.
- Medium controlled system – This system includes general domestic transportation including road, train, and flight transportation. In this case the damages are often harder to control than in the controlled system.
- Open system – The open system distribution includes export of products and large packages. A large-scale transportation organization is often the used and most packages are distributed in containers.

### **3.2.4 The packaging system**

The packaging system includes the packaged goods, the packaging materials and the packaging process.<sup>38</sup> All the three elements are closely intertwined and the choice of package is determined by the characteristics of the packed goods and the functions the package must fulfil. Moreover, it is the packaging materials that determine the packaging process, for example the choice of machine that is required for forming, filling and sealing. Various materials are used for packaging; cardboard, paper, corrugated board, plastic and so on. Each of these materials has its own unique properties that can be utilized in order to fulfil the requirement on well working packaging.

The packaging system can be divided into three levels packaging; item unit, sales or group unit and load unit.<sup>39</sup>

- Item unit – support the actual product and is the packaging usually displayed in stores.
- Sales or group unit – This type of packaging contains a number of item units. It could be displayed in stores or work as a compliment at inventory.
- Load unit – The purpose of the last level is to unite the packaging for transport. The choice of the unit load is highly dependent upon transport, but mostly pallets and containers are used.

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<sup>37</sup> Logistikens grunder, p496, 1998, Lumsden K

<sup>38</sup> Integral logistic management, p776, 2004, Schönsleben P

<sup>39</sup> Integral logistic management, p777, 2004, Schönsleben P

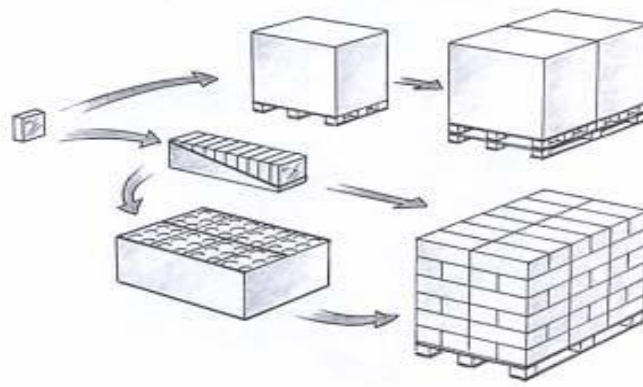


Figure 8, Different levels of a packaging system.<sup>40</sup>

### 3.2.5 The function of the package

As the requirements of the package as changes, from the traditional protection mode, to an integrated link in the supply chain a well working package require so much more today. In order to develop a well working package, several key holders requirements need to be fulfilled. The figure below show a wide range of areas throughout the supply chain, each with there own specific requirements on the packaging.



Figure 9, Requirements on and imposed by the package.<sup>41</sup>

<sup>40</sup> Förpackningsguide för dagligvaror, p 3, 2005, Bernhardsson L. et al

<sup>41</sup> Packaging logistics – a value added approach, p 43, 1998, Johnsson M

It is a complex environment and all the specific requirements have their origin from the fact that each area and key holder wants a package suitable for just their needs. This complexity, to fulfil all areas and key holders' wishes at the same time, is one of the most important problems to solve within the area of packaging logistics. To solve this problem it is important that already in the development process involve actors from each area to work together and design a model that is accepted by everyone. To further understand the complexity in the design and development process of a package a detailed description from the four main areas are presented below.

**Customer requirements;**

*"The package must be easy to carry home and provide along shelf life with very little waste material at the consumer's place to take care of."*<sup>42</sup>

**Distribution requirements;**

*"The package has to be model of half and regular pallets that are easy to stack without any need for glue or wrap around plastic film. Packages should have less weight than 15kg, be easy to label, and provide a long shelf life."*<sup>43</sup>

**Retailer requirements;**

*"A package should have a selling design adjusted to pallet and shelf dimensions, no waste material to handle, be easy to label and to handle, and provide a long shelf life."*<sup>44</sup>

**Production requirements;**

*"The package must be cost effective in production and distribution. Packages that arrive to the distribution central are often big and heavy for manual handling, the label is destroyed and the outer packages have a low strength."*<sup>45</sup>

A second approach in order to further describe the complexity that the actual package, and thereby an anti-shrink package, need to fulfil are presented below in figure 11. Five main function groups are displayed, and within each group a more detailed description of the packaging demands are showed. The reader should keep in mind that these requirements are demands in addition to the shrink related issues that will be presented in the coming anti-shrink packaging chapter in the report. In the figure the interaction between the different areas are also displayed, as the main groups are overlapping each other. However, it is impossible for a package to fulfil all required demands, as described before a compromise is needed.

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<sup>42</sup> Packaging logistics – a value added approach, p 40, 1998, Johnsson M

<sup>43</sup> Packaging logistics – a value added approach, p 40, 1998, Johnsson M

<sup>44</sup> Packaging logistics – a value added approach, p 41, 1998, Johnsson M

<sup>45</sup> Packaging logistics – a value added approach, p 41, 1998, Johnsson M

Function of packaging		Demands on packaging
Protection function		withstand heat and cold
		air- and watertight
		resist corrosion
		dust-free
		chemically contents
		preserve contents
		non-combustible
Distribution function		stable in form (stiffness)
		resist impact
		withstand impact, shock
		withstand pressure
		resist tearing
		stackable
		non-slip
		standardized
		facilitate handling
		automation friendly
Sales function		creates (standard) units
		space saving
		area saving
		economical
Information function		product promotions
		informative
		identifiable
Use function		distinctive
		easy-open
		resalable
		reusable, recyclable
		environmentally friendly
		disposal friendly
		hygienic, aseptic

Figure 10, Conceptual framework to handle the diverse functions and requirements of packaging.<sup>46</sup>

### 3.2.6 Total cost approach

The total cost is an important conception in packaging and packaging logistics contexts, including shrink related questions. The goal to strive towards is to reduce the total packaging cost. In order to obtain this, it is important to collect all costs associated with a certain decision at a certain situation to avoid sub optimization. For example, reducing costs in one activity may in turn have effects that raise costs in another activity, whereby the total cost of activities increase. Once again it is important to consider what is best for the whole supply chain.

Since the packaging accompanies the product through the whole supply chain, from point of production to point of sales, it decisively determines the cost deriving from handling, storage,

<sup>46</sup> Integral logistic management, p774, 2004, Schönsleben P

transportation and damaged products. Furthermore, in order to develop a cost effective package it is important to have great knowledge within the following areas;<sup>47</sup>

- The product it self
- In which markets the product will be sold
- Modules of transportation, pallets, dolly or containers
- Which packaging alternative are available
- Are there any special restrictions
- Social expectations, for examples environmental issues
- The transportation system used in the supply chain, including different handlings equipments in DC and stores

When estimating these costs, a division into direct and indirect costs is usually made.<sup>48</sup> Direct costs are caused by a specific cost unit, for example a product or service, while indirect costs are costs for resources used by numerous cost units. Generally the most focus is put on the direct material costs for packaging, but the indirect costs are at least as important to consider.

For packaging the direct cost involves material, packing and fees for collection and recycling. The indirect costs are essential to investigate since it is through them opportunities example the pallet adaptation of the packaging and therefore the coefficient of fullness during transportation, which in turn influences the distribution cost. In the same manner the design also influences the costs for packing, transportation, storing, distribution handling and customer handling together with collection and recycling. I the content of shrinkage it is important to remember that a damaged product usually causes cost that by far exceed the product value<sup>49</sup>, mostly because the extra administration and separate handling processes.

In the work of reducing cost though lower shrink level most work handles about finding an optimised package for each product considering the cost and level of damaged products. A way of showing this can be seen in figure 12.

The figure shows that the cost of packaging increases with the packaging protective abilities. The cost of damages part decreases on the other hand with a more protective package. As the figure shows in order to find an optimised package, in other word the most cost effective, some level of damages, product shrinkage, must be accepted.

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<sup>47</sup> Logistikens grunder, p491, 1998, Lumsden K

<sup>48</sup> Förpackningslogistik, p 39, 2000, Dominic, C. et al.

<sup>49</sup> Förpackningslogistik, p 39, 2000, Dominic, C. et al.

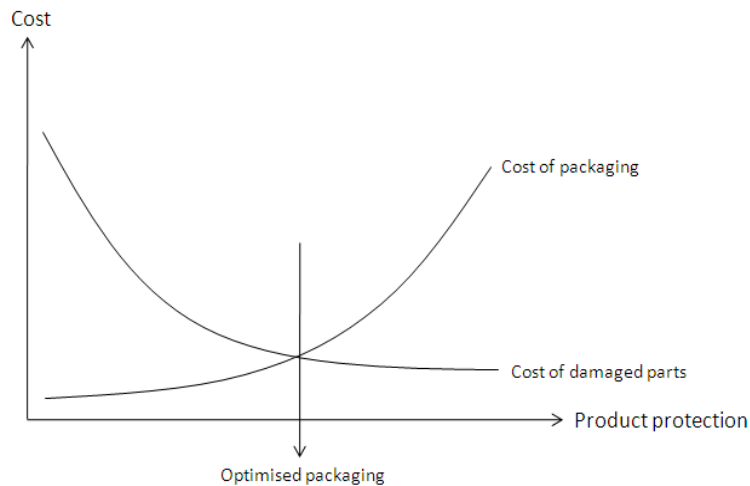


Figure 11, An optimised package is a cost effective package.<sup>50</sup>

### 3.2.7 Life cycle analyse

In the work of developing new packages the environmental aspects are getting more central along with the ongoing discussion about climate changes. Throughout the supply chain all packages effect the environment, from the manufacturing process until disposal. Packaging design and characteristics could both simplify and obstruct the handling process and the effectiveness of transportation. It is therefore important, already in the packaging design process, to consider the environmental aspect linked to the package, anti-shrink packages are not an exception. All the basic environmental requirements below are important to have in mind in when developing an anti-shrink package, based on information from packworld.<sup>51</sup>

- Minimizing use of materials.
- Favouring materials made from renewable resources.
- Having packaging that can be recycled or composted.
- Incorporating recycled content.
- Favouring materials and manufacturing processes that minimize pollution.

It is also important that the company as whole are trying to improve and developing within the following strategic levels,<sup>52</sup> which all influence and affect the choice of packaging regarding size, material and handling environmental;

- The structure of the logistical system – Number, size and location of both plants and DC are important issues
- Procurement and distribution system – Right choice of sub-contractor and customers are effecting the overall result
- Controlling the flow of products – A procurement s strategy, for examples, will also affect the distribution system.
- Transportation resources – Which vehicles are used and how could they be used the most effective concerning distribution routs and loading.

<sup>50</sup> Logistikens grunder, p495, 1998, Lumsden K

<sup>51</sup> Packworld, 2008-07-09

<sup>52</sup> Logistikens grunder, p703, 1998, Lumsden K

### 3.3 Anti-shrink packaging

After the above presented aspects to consider in packaging development. The following section will now concentrate on the element that the packaging development team should keep in mind in order to assist in the work of reducing shrinkage. The nine key elements presented below are in a retailer/store operations perspective and discuss features that an anti-shrink package should obtain, all based on a report from P&G.<sup>53</sup>

- It is important that the barcode is read “first time” every time at the check out. If barcodes could not be read, items may be wrongly charged to the customers and making the book stock records inaccurate (out of stock), which lead in shrink results. In cases of secondary barcodes, for example twin packaging or bonus packs, it is important to make sure that only the right barcode is read and not the one for item level.
- The product needs to be able to get to the shelf intact 99,9% of the time – Damaged items are often seen as “out of stock” by consumer but “in stock” by the reordering system until it is manually adjusted. Problems are also occurring if items are not documented appropriately. Further more, packages could sometimes not stand the rigorous handling process or re-pack in to special boxes. The problem with special boxes is that they often contain of different item levels packaging mixed together, light and heavy items.
- It is important that employees clearly could see the difference between items within the same range – Confusion will create an opportunity for errors which could lead to out of stock, items not re-ordered and wrongly counted. It is also important to clearly mark secondary packages in the inventory, easy counting and create an overall view, and watch out for differ in quantities among the same cube packs in the shelves.
- Make sure consumer clearly see what they are buying – Curious customers often see no harm in opening packages in store to check what is inside is what they want. Unfortunately, most customers do not buy the open package even if it was right, resulting in damages items and thereby shrink. These problems are frequent in some categories and at the time of introduction of new products.
- Make sure the packages are tamper evident – This is especially important for products in the health and beauty segment as cosmetics, oral care and skincare. Consumers need re-assurance that the products has not been touched or partly used as a sample for someone else. A side benefit of products in some sort of tamper evident wrap is that damages are reduced and it is easier to clear away dust.
- Avoid packages where the content could be easily stolen – Thieves stealing for personnel use do not need the package and will try to open the packs inside the store to steal the content or part of it. The half open packages are seen as “out of stock” by the customers and consequently reduce sales and increase shrink.

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<sup>53</sup> Anti-shrink packaging, 2007, P&G



- Right size of package are important, it should not promote a feeling of vulnerable – Oversized packages have been helpful in some areas where space is less of an issue. From a shrink perspective, lager is better than smaller, as it helps to prevent customers from hiding products. It will also be easier to attach external security device on a large package. But sustainability and trading standards provide a counter to this approach.
- Make sure the products interact with current anti-theft equipment – In this case it is important to scan the market for technical solutions and upcoming inventions. New items must be able to work with the implemented anti theft equipment.
- It must be possible to use electronic article surveillance tags on the product – Many retailers have adopted exit detections as a measure to protect hot items. The system involves soft and hard tags.

### 3.3.1 The perfect anti-shrink package

Next big question in the work of finding a smart anti-shrink package is – How should a perfect anti-shrink package look like in theory? In the report from P&G<sup>54</sup> they have presented a package that in there point of view fulfil most of the demands set by retailers and manufacturers.

This package has space left on top where a hard or soft tag could easily be applied. It has a see through plastic clam which means there is no opportunity for consumer confusion and at the same time it makes it harder to steal the content.

The package involves only one SKU so easy not to make counting mistakes. The barcode on reverse, unfortunately not seen at the picture, is free of any ridges in the pack that could reduce read rate. Further more, the package is sturdy and robust which means that damages in transit and on replenishment are minimised and it stands up on its own or can go on to special anti-theft pegs.

Last but not least the package is slightly larger than needed to reduce store owners concerns over vulnerability to theft.



Figure 12, An example of a good anti-shrink package.<sup>55</sup>

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<sup>54</sup> Anti-shrink packaging, 2007, P&G

<sup>55</sup> Anti-shrink packaging, 2007, P&G

### **3.4 Supply chain co-operation**

In the beginning of the theory chapter supply chain co-operation was pointed out as indispensability, see figure 1; the fundamental stages of anti-shrink packaging, in the anti-shrinkage work. The following part of the report will guide the reader through the supply chain concept, from traditional work to supply chain management, in order to develop the desired level of co-operation, creating an overall understanding and a common “language” associated to shrinkage.

#### **3.4.1 Logistic in the supply chain**

There are many recognized definitions of the term logistics, one commonly used is the one from The Council of Supply Chain Management Professionals (CSCMP). They define the term logistics as follows;

*“Logistics is that part of the supply chain process that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers’ requirements.”<sup>56</sup>*

As the definition above states, logistics is a part of the supply chain process and not a function. In order to accomplish customer service fulfilment, the logistics process strives towards interlinking and co-ordinating all the activities, from the source of raw material to the end consumer in the supply chain. Including in the logistical process are also the physical activities such as moving and storing goods, providing the information necessary to support these functions and managing the overall process.

All actors strive towards a handling and cost effective manner as possible to achieve both customer and company satisfaction. Customer satisfaction is obtained by providing customers with the right kind and amount of products as well as on the right time and in the required condition to right cost. In addition, the logistics process contributes to the revenue growth of the company in question.

### **3.5 Partnership strategy**

In this case the partnership strategy in the supply chain refers to the network of organisations being involved, through upstream and down stream linkage, in the process of providing products and services to the customers.

The type of increased co-operation among involved organisations is vital when it comes to the fact to reduce shrinkage. Shrinkage is a cross-functional problem that needs every partner’s attention. If actions are taken by individual members rather than consider the system as whole, measures taken can even deteriorate the situation. To make the work even harder many problems are believed to be “washed down” through the supply chain and are not exposed until it comes to the end customer, the retailer.<sup>57</sup> These are some of the main reasons why a well working co-operation is so important in the work against shrinkage. In this section, two extreme types of co-operations used will be presented, the traditional customer-supplier relationship and the strategy of supply chain management. In reality, these two strategies are often mixed and many companies applying both of them depending on the product.

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<sup>56</sup>CSCMP, 2008-08-10

<sup>57</sup> Shrinkage in Europe, p 45, 2004, Beck A

The objective of presenting two types of strategies are to get the reader to identify there present strategy and realise the different and conceivable measures needed in order to obtain the better strategy, supply chain management. The strategies will be compared with regard to the areas of quality, cost, delivery, flexibility and co-operation.

### 3.5.1 Traditional customer-supplier relationship

The customer-supplier relationship strategy is most common in co-operations with short duration of delivery agreement and low intensity of entrepreneurial co-operation.<sup>58</sup> The relationship is determined by the law of supply and demand and suppliers are chosen on the basis of low prices. To obtain cost reductions the suppliers are often played off against each other. The table below are presenting some statements within each focus area of the strategy, focus is set on operating performance so resources must be implemented in the best possible manner.

#### Quality

- The supplier is responsible for meeting the customer’s quality specifications.
- The customer is responsible for the acceptance and must check the meetings of the specifications.

#### Cost

- The customer chooses a supplier, where quality is sufficient, primarily according to the lowest price, following the law of supply and demand.

#### Delivery

- The customer awards a contract stating desired product, quantity and delivery due date.
- Safety stock is necessary in order to avoid the problems caused by delivery delays.

#### Flexibility

- The customer aims for multiple sourcing through finding new suppliers.
- If transactions costs become too high, a make decision is made.

#### Relationship between the companies in a logistics network

- Starting from the raw materials and standardized parts, it is the customer who develops all products and processes in the logistics network.
- The customer delegates the manufacturing of semi-finished goods or parts for the manufacturing process to suppliers. The customer controls the quality particularly of first deliveries.

Figure 13, Strategies of the traditional customer-supplier relationship.<sup>59</sup>

### 3.5.2 Supply Chain Management

Supply chain management, SCM, is seen as one of the most powerful logistics management concepts for improving the performance across the logistic network.<sup>60</sup> A definition presented by The Council of Supply Chain Management Professionals (CSCMP) describes the concept as follows;

*“Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.”<sup>61</sup>*

<sup>58</sup> Integral logistic management, p 80, 2004, Schönsleben P

<sup>59</sup> Integral logistic management, p 80, 2004, Schönsleben P

<sup>60</sup> Supply chain management, 2002 , Hieber R

<sup>61</sup> CSCMP, 2008-08-10

Although the benefits of SCM are well-known in the business, many companies have only put this concept into practise in a limited matter. Together with an increased competition on the market and an industry that are becoming more and more complex, through the globalisation, companies are starting to realise that for further savings it is essentials to improve there external business relationship. The table below describes the strategy for supply chain management. Once again the focus is set on operating performance so resources must be implemented in the best possible manner.

#### Quality

- Each co-maker feels responsible for the satisfaction of the end user.
- Quality requirements are developed and improved mutually.

#### Cost

- Through single sourcing, greater business volume and thus lower cost prices are achieved.
- Long-term blanket orders allow intermediate stores to be reduced.
- The choice of a supplier is made according to total coasts, that is, in the consideration of opportunity cost.
- Sharing of methods and know-how among co-makers reduces costs.
- Each co-maker is active in its area of core competence. This yields the best possible return from the resources implemented.

#### Delivery

- The same logistic are necessary for all co-makers (same operational procedures, documents and so on).
- Planning and control systems are linked (for example, via EDI).
- The choice of co-makers depends with chief importance upon speed, that is, the co-maker's contribution to short lead times.

#### Flexibility

- All co-makers give impetus towards product development.
- The buyers' market guarantees the robustness of the approach: transactions cost are low, and replacement suppliers may be arranged relatively easily (by decision)

#### Entrepreneurial co-operation in the logistic network

- All co-makers are involved in product and process development from the start.
- All co-makers are involved in planning and control.

Figure 14, Strategies of supply chain management.<sup>62</sup>

<sup>62</sup> Integral logistic management, p 85, 2004, Schönsleben P

### **3.6 Loss prevention actions on the market**

In order to deal with the shrinkage problem there are some known actions on the market, developed by previous ECR studies, which companies can make use of and implement. In the following section three company characteristic factors together with the ECR shrinkage road map are presented.

The following characteristics to reduce shrinkage are a summary of the result from the study Effective retail loss prevention<sup>63</sup> by the ECR Europe among US retailers, and are considered to be important influential factors in creating a low shrink environment in the company.

#### **3.6.1 Strategic level factors**

The most important factor and a prerequisite to reduce the shrinkage level in a company is a well chosen strategy. This strategy should create, sustain and embed an organisational awareness and commitment to deal with the problem of stock loss.

It has to start at the very top of the company with senior management being fully committed to the concept of shrinkage as an important priority among all parts of the organization. Furthermore, it is important to ensure organisational ownership, making sure that all of the functions within the organisation recognise the importance and value of prioritising loss prevention.

Without this level of commitment the loss prevention department/team will not receive the mandate and resources to implement new approaches to tackle stock loss. Last but not least it is important to embed loss prevention, making sure that loss prevention is part of the foundation of the business and acted upon by all departments, the shrinkage problem should always be high up on the agenda.

#### **3.6.2 Culture level factors**

The next level factors to reduce shrinkage are an assortment of sub strategies focusing on a series of factors that can be directly influenced by the stock loss prevention department/team. These series of factors would not only affect the way business operates in general but also more specifically the way in which the anti-shrink work interface the functioning of the business as whole. More specific it is important to providing strong leadership, generating energy, direction, focus and a vision for loss prevention in the company.

At the same time prioritising people is important, making sure that the company employs the right people and motivates them accordingly to take shrink seriously. The loss prevention team should consist of multi-faceted and forward thinking employees with a genuine passion for the subject and a desire to reduce shrinkage. Their work should also emphasise procedural control, ensuring that process adherence is a key part of what loss prevention does, but also recognising a balance has to be struck between service and control.

In order to tackle the problem, the loss prevention team should be encouraged trying new innovations and technologies. This since retailing and loss prevention is a dynamic area which constantly requires new thinking and a willingness to change.

Further more, it is important to provide the loss prevention team with accurate and up-to-date information data to enable decision making to be based upon an evidence-based approach. As mentioned

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<sup>63</sup> Effective retail loss prevention, 2007, Beck A

above talk shrinkage is a key factor and this should not only be intended for top managers, instead shrinkage should be kept on the agenda among all company departments.

### 3.6.3 Operational level factors

The final theme in the work to reduce shrinkage is operational level factors. Since the FMGC business involve thousands of SKUs being distributed every day by a large amount of people to a wide range of retailers. Keeping control of this is impossible unless clear processes and procedures are in place.

In order to obtain this, a clear store management responsibility must be set, without the active support and engagement of all store staff, but particularly managers, loss prevention will not be properly controlled and minimised. At first hand they are expected to take responsibility for the day to day monitoring and control of shrinkage.

### 3.6.4 The ECR Europe shrinkage reduction road map

The shrinkage reduction road map is developed by the ECR Europe shrink group and acts like a manual describing the general activities that need to be taken in order to reduce the stock loss within a company supply chain, and develop a company policy against shrinkage. Moreover, it also has an objective to create a common “language” to simplify the communication and understanding between the involved partners. The road map consists of a 6 step approach, which together will result in a systematic approach, to build the capability to identify and understand the cause of shrinkage and the actions needed to reduce loss, and thereby improve the overall profitability of the company. Important though, is that every business environment is unique so a single right strategy for reducing stock loss does not exist. The Road map provides a basic structure that need to be tailored to match the prevailing circumstance in order to be effective. Through a number of projects the road map has proven to be working and a reduction of shrinkage has been obtained by its users. The picture below shows the different steps in the ECR shrinkage reduction road map.

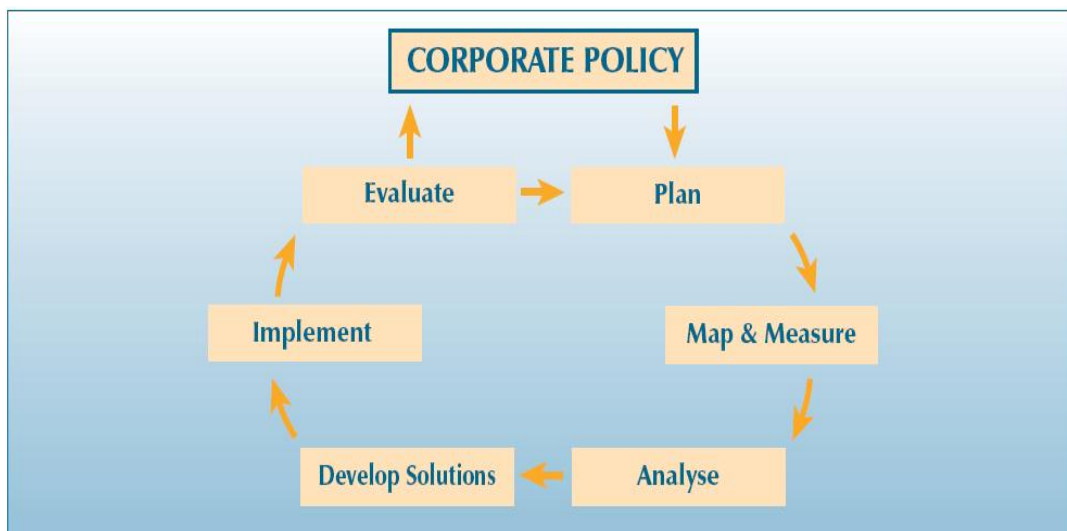


Figure 15, The ECR shrinkage reduction road map.<sup>64</sup>

Bellow follows a short description of the different steps and the objectives. Each and every step is a summary from the report – Shrinkage: a collaborative approach to reducing stock loss in the supply chain<sup>65</sup>, done by the ECR Europe.

<sup>64</sup> Shrinkage, p. 23, 2003, Peacock C & Fonteijn J

Step 1, Develop a project plan:

- Set a systematic approach to the project. It is important involve stakeholders across the company and throughout the supply chain in order to developed an effective strategy. Since the FMCG business consists of a wide range of product it is appropriate to focus the investigation on “hot products”, products most vulnerable to loss.
- Identify and assemble project recourses. Only through collaboration along the supply chains between the various partners where both internal and external problems are considered together can an analysis be undertaken to deliver early “quick win” results.
- Undertake a stakeholder analysis. A stakeholder analysis will identify the different areas across the supply chain and how they will be affected by the effort to reduce shrinkage. Since the shrinkage reduction often is associated with people issues it is also important to develop an appreciation among the stakeholders.
- Set project goals. It is important to set clear, realistic and attainable goals.

Step 2, Map key processes and gather measures.

- Map key processes. This process begins by establishing an understanding of the nature of the losses and the current used operational system. In order to get a full understanding and in-depth information of the system it often necessary to physical follow a product as it pass through the supply chain and documenting the steps involved in receiving, storing and dispatching. Though this in-depth understanding the cause of losses can be identified and a baseline can be established. The baseline is important since it will later be an important tool to measure the effectiveness of the implemented solutions.
- Gather measures. This process involves a two step approach. The fist is to identify and collect existing data. The second step is to collect new data which include both hard data, statistic on a specific product, and soft data, interviewing and observation. Through this data the objective is to be able to answer the questions: What happened? How it happened? When it happened?

Step 3, Analyse risk and identify root causes.

- Undertake a supply chain risk assessment. In order to make the most out of the information collected through mapping and measuring a risk analysis should be established. A systematic risk analyse will identify the “hot spots” in the supply chain, which is the phase were the severity, occurrence and detectability is the highest. The “hot spots” will be prioritised for further investigations.
- Identify root causes of process failure. At each “hot spot” in the supply chain the root causes should be identified and the cause and effect of the “hot spot” should be answered an in-depth analysis.

Step 4, Develop solutions and prioritise actions.

- Design solutions that reduce risk. This is the stage where many traditionally stock loss project starts. However, with a well accomplished pre-study the solution design can be design to

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<sup>65</sup> Shrinkage, p. 23-38, 2003, Peacock C & Fonteijn J

resolve the problem and not the other way around, you have a great solution and then search for a problem to apply for it. Solutions are very project specific so it is impossible to list particular solutions for particular problems.

- Balance solution cost against projected benefits. Good solutions obtain a balance between the cost of implementation and the benefits they deliver. However, it is important to calculate the benefits over a long-term perspective since the first years often involve extra cost e.g. training staff and technical equipment.

Step 5, Implement and trail solutions.

- Develop implementation plans. Depending on the solutions outcome the implementation phase differ. Some solutions are simple, quick and effective that makes a good sense to implement straight away without any specific plans, so called “no brainers”. Other solutions require more planning like establishing a best practise or ever conduct experiments or pilot projects.
- Implement solutions. This is the phase where the actual solutions are tested which hopefully results in a reduction in stock loss.

Step 6, Evaluate implementation.

- Determine impact of intervention. Each stock loss reduction project must end with a rigorous evaluation of the impact the solutions have had and how any successful solutions might be further developed. It is also important that an evaluation is led by someone who can provide an objective review.
- Integrate best practice. So fare the investigation has concentrated on the “hot spots” in the supply chain. Next step is to decide what to do with all the information collected in these areas and how to use it. A number of options are possible e.g. a roll out to other places in the supply chain or different products.

The work to reduce stock loss does not end here even if all the stages in the Road map have been accomplished, it is important to remember that the shrinkage problem is a dynamic problem. This means that companies need to continually analyse the threats in order to react promptly to new approaches for stock loss adopted by offenders. Below is the loss prevention actions on the market summarised into a 6 step approach.

6 Steps To Successful Shrinkage Reduction
• Written company policy
• High levels of intra-company co-operation
• Prioritise the problem
• Incentivise staff
• Conduct regular shrinkage reduction projects
• Make use of the ECR Europe road map

Figure 16, A 6 step approach to an effective anti-shrink work.<sup>66</sup>

<sup>66</sup> Shrinkage in Europe, p. 46,2004 , Beck A



## 4 Supply Chain Walks

*In this chapter, information and results from the supply chain walks will be presented. The gathered information has been divided into key areas providing the reader with up-to-date information about the ongoing anti-shrink work in the FMCG business.*

Most work and measures taken among companies to reduce the shrinkage problem are often ad hoc and not well conceived, at least if you consider the supply chain as whole. Through this, companies drive complexity and extra cost into the supply chain. In order to map the actual measures taken and to gather up-to-date information about the ongoing anti-shrink work, associated technologies and future ideas on anti-shrink packages, a set of Supply Chain Walks, SCW, were organised. This multi-case study approach were done among supporting companies of the ECR Europe shrinkage group, which all had an interest in anti-shrink packaging and a more effective handling process. During the SCWs selected products were followed from point of manufacture to point of sales. At each SCW, one product was selected as a primary product but interesting information about all involved products was still taken. The SCWs were also done in order to understand how different companies tackle the problem differently and if they make use of the existing knowledge in shrinkage. The chosen places to visit were determined together with representatives from each company focusing on the stages in the supply chain where the most shrinkage appear or where actions are taken to prevent the problem. This resulted in visits to manufacturing sites, distribution centres (DC), re-packing companies and stores.

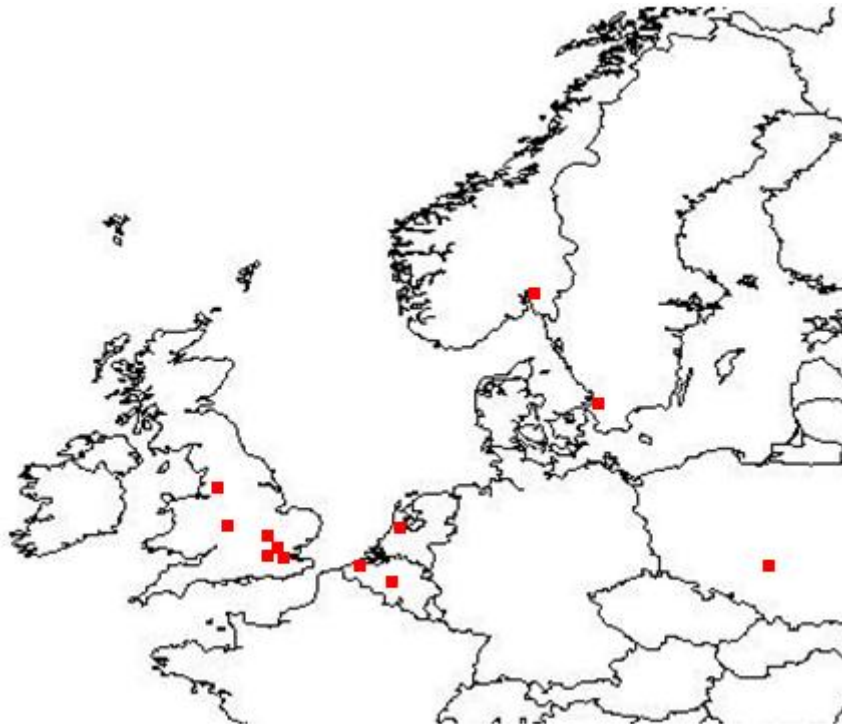


Figure 17, Visited locations within the selected supply chain walks.

## 4.1 The supporting companies

The involved companies from the ECR Europe shrink group are all retailers and manufacturers in the FMCG business. Jointly they perceive a potential in savings by reducing shrinkage and are thereby ready to display parts off there supply chain and providing information about there work. The figure below shows the supporting companies together with some short statements summarising each and every ones business, based on information collected from companies' homepage.



Figure 18, The supporting companies including in the supply chain walks.

## 4.2 The selected products

As mention above, each SCW had a primary product were the focus was set. In total there were five different products. The idea of focusing on just a few products was to gather information about these products and then implement the results on other products and business areas. All of the products have been selected by the ECR Europe shrink group and are all described as hot product, especially vulnerable to shrinkage. The selected products to follow have been;

- Mascara from L'Oreal
- Nivea DNAage Day crème from Beiersdorf
- Gillette Fusion razors, OralB Sonic toothbrush and Duracell AA batteries from P&G

Jointly the products has some characteristics that makes them especially vulnerable to shrinkage, they are all;

- Expensive
- Small packages, easy to conceal
- Everyday used products
- Could fairly easy be sold on the black market

### 4.3 Findings from the Supply Chain Walks

In the following section of the report the findings from the supply chain walks will be presented. Instead of giving further details about each SCW the data has been organized into six key areas, see content box below. Even though the main focus of the report is on anti-shrink packaging design throughout the SCWs areas as the handling process and external technologies has proven to be as important features as the actual package. In many cases the work to prevent shrinkage is actually mainly focusing on the latter two areas than the actual packaging. As you will see in the findings the package need to adapt to these techniques and are therefore within the scope of the project.

Within each key area the belonging information will be presented in detail for retailer and manufacturers. However, each group does not necessary contains information from all involved companies, mostly because the different companies focus and prioritise the shrink problem differently. All pictures that follow within the findings are taken during the different SCWs and are there to supplementary explain and show the different measures taken.



Figure 19. The 6 information key areas from the supply chain walks.

#### 4.3.1 Strategies

In order to lower the shrink level the retailers included in the survey has implemented a wide range of strategies, from overall co-operate strategies to in-store strategies decided by the store managers. The ongoing work is constantly improved and developed, but still some identified actions are jointly for the business. The information presented regarding strategies is broadly describing the work that the different companies and especially the shrink departments/team are performing today.

Among all of the involved retailers a special anti-shrink team has been established. Each team controlling the different actions within each supply chain, making sure that the right measures is taken and that company guidelines are followed. Their work also contains of solving stock loss situation that occur, an action that are taken very seriously and carefully investigated. Mostly the work for these teams is concentrated around the area of theft and to complement them are in-store surveillance and data bases of product sales and procurement. Some retailers have also established advanced shrink data bases in order to control the level of shrinkage even more in detail.

A special focus on hot products is also a strategy adopted by most companies. The hot products are products that are more vulnerable to shrinkage than others and thereby treated differently. The special treatments includes higher focus, more frequent cycle count, extra surveillance and in some cases even special areas both in DCs and in stores with higher overall security level and specially trained staff.

The selected hot products also have an effect on the product range found in-store. For some retailers with stores located in areas known to have a high level of shrinkage the hot products are only sold by limited matter or not at all. The same situation could also be found at retailers with a franchising organisation. At these stores the store manager independently selects the product range, which results in no or just a limited amount of hot products associated with high shrinkage level. Most of the involved retailers explain that all products are analysed and evaluated if they should be kept within the product assortment or not, depending on for example the shrinkage level. To improve the situation some retailers have involved third party company handling the un-packing of selected high value merchandises in store and to control the re-order process. This action is mainly taken in order to obtain a higher level of product control and if something goes wrong the investigation process will be easier compared to investigate their own employees.

In-store strategies involve for examples external packaging features, a limited number of SKU found in store and in-store security surveillance. The strategy of limited SKUs is taken to make it easier to control the products and speeding up cycle counting. In store surveillance are including CCTV control and guards patrolling the stores. At DCs and at some retailer stores security scanning system is implemented where randomly chosen employees are searched when leaving the site.

For the manufacturers the shrinkage problem is not seen as a problem within their own organisation. The situation, from a manufacturing point of view, could be explained by the limited connection between products and customers and the fact that at the manufacturing sites there are not as many different products as at the retailers' site. Due to this situation the number of strategies taken is also limited. As described above, some manufacturers are also randomly scanning and searching exiting employees and trying to have employees under long term contract. In order to not send loads with damaged goods or damaged packages each load is often controlled before distributed to retailers. A part of this, most of the actions are associated with the concepts shrink KPI, key performance indicators, in the process trying to map the level of shrinkage and/or continuous improving process strategies. However, the level of shrinkage is often acceptable.

#### **4.3.2 Definitions**

With the shrink definition from the ECR group in mind, described in the beginning of the report, it would be interesting to see how well the companies' definition corresponds to it. In some cases the companies had a very clear definition and in other cases not. The below stated definitions are examples from the easy stated definitions. For the manufacturers the situation has proven to be easier containing one clear definition.

*"Every accountable stock loss", retailer*

*"Everything excluding waste", retailer*

*"Everything we lose from procurement to selling excluding fire, burglary and in store used products by employees", retailer*

*"The differ between order and physical distribution", manufacturer*

#### **4.3.3 Shrinkage level**

An interesting measure during the supply chain walks are the actual level of shrinkage from the including companies. This measure is also a good number in order to investigate if the work from ECR

shrink group presented in the theory section of this report is accurate and up-to-date. As for the definition some companies could present a very specific number and some had a less precise answer.

For the retailers the overall shrink level is around 0.6-3%, the fact that the shrink level is measured differently does certainly affect the numbers. A trend among all retailers was that some high value products were more affected, like the selected ones for this study. The product group pointed out as the category with the highest shrink level by most of the retailer was cosmetic and, especially mascara. The level of shrinkage for this product was calculated around 15-20%.

Interesting though, is that all of the involved retailers thought that the shrink situation has become better over the last years. This positive trend is probably a result from the increased focus at the anti-shrink work, which successfully managed to establish the shrink problem higher on the agenda, and is now something that even the boards of directors have a great interest in. Furthermore, the retailers have put higher pressure on the store managers which often include action planes on how they should lower their shrinkage. The shrink level is also more often part of the store bonus system and not obtained levels could involve special education and workshops for employees and store managers. The interviewed employees are also pointing out that tools and measures to prevent shrinkage have become better and are constantly developing.

During the interviews, among the retailers, when the source of the problem has been discussed some interesting differences have been discerned. Overall the retailers distinguish theft as the greatest problem, but some retailers assert that there is a big underestimation in both administrative failure and process failure, including in this is for example mistakes during cycle counts and inaccuracy in stock numbers. Within the area of theft small differences could also be distinguished, some believe that external theft and shoplifting is the main source whereas others believe it is 50/50 between internal and external theft.

Once again the situation is rather different when it comes to the manufacturing companies. In this case, when a specific number has been presented the overall shrink level is around 0.2-0.5%. As mentioned before, this level of shrinkage is an acceptable level and the fundamental reason why manufacturers do not consider shrinkage as a problem within their own organisation. The shrinkage that exists originates most from damages part during picking and some level of internal theft.

#### **4.3.4 Packaging features**

Since the primary focus of this report is set on anti-shrink packages features the original idea was to just focus on the actual package. However, during the SCWs the measures taken were mostly external measures not focusing on the actual package in itself. On the other hand, the role of the package is still important and could simplify the handling process or even “design out” some measures.

As described in the theory chapter the package involves a complex system. The overall reason of all the measures taken, based on the interviews, is to make it harder for customers to get in contact with the product, open the package, or make it harder to conceal it. At the same time it must be easy for customers to identify what they are looking for and an easy open package that is environmental friendly. Moreover, the store managers want to minimize the possibility of seizing many products at the same time, a problem often associated with organisational crime. In order to make it easier to organise the different actions this part is further divided into;

- Package design
- Blister pack
- Soft and Hard tags
- Safer boxes
- Plastic wrap
- Customer preparation
- Vedormark
- Promotion packages

#### 4.3.5 Package design

Regarding collected information about package design involving both group package and primary package, not covered by a separate part below in this report, the comments from retailer and manufacturers could be divided into three areas.

Firstly it must be easier to separate some products from each other. Today several product categories from the same brand almost look like the same. This creates problems both for pickers in DCs, picking the wrong items, and in store concerning cycle counting of products, both effect shrinkage rates. In this case the retailers propose that products from the same brand and category are provided with some sort of identification marks, for examples colour line, which would make it easy to separate them from each other. Good examples of products fulfilling these demands are the Duracell batteries and OralB Sonic tooth brushes. As you can see on the picture below, the batteries are marked in the upper left corner with a yellow and green product code, the double A and triple A, and for the tooth brushes were the upper part of the package is differently coloured depending on the type of brush. For the Duracell batteries the colour identification system also includes the group package, for example a yellow group package of double A batteries.



Picture 1, Good examples of colour coded products, see upper part of packages.

Secondary approach to package design is involving the group package. In this case the retailers have discussed if the brand names sometimes seen on group packages are needed or should be further developed. Some retailers assert that brand names on group packages just attract theft since it is so easy to identify where the expensive products are located. On the other hand, other retailers assert that brand names on the group packages instead could encourage employees to keep better control over expensive products, as it is easier for example to identify which pallets they are on.

Also discussed among the visited retailers are if the group packages really are needed. However, in this question the retailers are more united with each other. For the retailers most group packages only creates extra work un-packing products and recycle packages. The question is not directly linked to shrinkage but is important to consider if developing new products packages. Retailers suggest that

packages packed in solid and easy stable packages, at manufacturers, only should be furnished with some sort of side and corner protection during distribution. From the manufacturing point of view, the group packages are used for product protection during both storage and distribution. However, the retailers assert that this protection does not really help and that it would be worth trying without. In addition, this would also be more environmental friendly.



Picture 2, A Fusion package damaged during distribution despite a protecting group package.

The third problem associated with package design involves the shelf ready packages, in this case mostly the Oral B Sonic packages. Retailers assert that the shelf ready packages are more often damaged in the handling process. The problem is associated with the weakened areas, the perforation, done to make it easy to open the package. The retailers are aware of the purpose of less time consuming package handling and more cost effective in-store handling but suggest that the manufacturers somehow make a more stable and solid package. The problem could also be found at the manufactures sites, mostly within the plastic wrapping process before distribution. In this case packages could be damaged, squeezed together, if the wrap is done too tight. To solve the problem the manufacturers are attaching external corner cover at problem products.

#### **4.3.6 Blister package**

One of the most used measures, regarding package design, to reduce shrinkage is the blister package. The blister packing of products are mostly done by the manufacturers. The idea is to protect the product from actual customer contact but at the same time make it easy to distinguish and identify the product. Moreover, the blister package aims to make it harder for thefts to tear the package apart and conceal product. An example of a blister packed product can be seen on the picture below as the product is sealed in a see through plastic cover, a plastic clam.





Picture 3, Blister packaged Gillette Fusion razors.

However, it is important to consider the complexity in the area of blister packing. The companies want a well protected product and at the same time the customers want an easy open package. This dilemma makes it difficult and each product design has to be well thought-out. The fact that customers want an easy opened package has forced the manufactures to compromise with there product protection. Regarding the selected products in this study that are blister packed, mascara and Fusion, the packages at first looks like they are closely blister packed but on the backside some sort of opening arrangement is implemented, which still makes it is easy to open package, see arrows at the picture below. In this case, from an anti-shrink perspective, the blister package has a limited affect. On the other hand, there is no doubt that the blister package makes it harder for the customers to get in contact with the product and thereby reduce that type of shrinkage were customers open the package and tests the product.



Picture 4, Blister packed products provided with easy open arrangements, see arrows.

#### 4.3.7 Soft and hard tags

Electronic article surveillance, EAS, is a technological method for preventing theft, from for example retailer stores. It involves special tags, soft and hard, that are attached to the merchandises. The tags are removed or deactivated by the cashier when customers exit the store. If the tags are not deactivated or removed the installed security system sounds an alarm to alert the staffs that an active tags has exit the store. The two types of tags, soft and hard, are also treated differently at the cashier. The hard tags are removed and collected for re-use in store whereas the soft tags are just deactivated, and then follows with the customers back home. During the supply chain walks, including the visits to the selected stores, the tagging of products is probably the most common anti-shrink measure. In many cases it is actually pointed out by the store managers as the main action to reduce shrinkage within the area of package related shrinkage.



Picture 5, Example of soft tag, to the left, and hard tags, to the right.

The work of applying the tags to selected products is done by the retailers and mostly in store. Most store manager has received recommendations from their shrink team regarding what product to tag, often based on product price, and if they should use hard or soft tags. However, in the end it is up to the store manager to decide to tag or not. The actual tags are applied by ordinary staff before the products are displayed in store, which means that this action has to be as time and as cost effective as possible. A consequence of this is that the tags are attached to the products where it is done the fastest and easiest, resulting in a number of problems.

The first problem to consider with tagging is the fact that the tag covers important information, brand name or even bar codes, as seen on the pictures below. A wrongly placed tag might involve a feeling of uncertainty to the customer because they could not read the product specification or the exact product name. In a worst case scenario a wrongly attached tag could involve legal issues because it is covering product information, for example if a customer gets an allergic reaction from a product.



Picture 6, Products with insufficient attached soft tags.

The second issue is mostly associated with soft tags. Since the process of applying tags is done in-store it unintentionally results in tags mostly attached to the surface of the packages. A consequence of this is that customers could fairly easily peel off the security tag and undetected steal the product. As mentioned this is mainly associated with soft tags and could be solved by applying hard tags instead, a strategy applied by one of the retailers not accepting soft tags anymore. On the other hand, the hard tags require more work, regarding both product attachment and removal. The hard tags also require a rather plain surface when attached to the product.

For some products the material choice in the package or in the product could affect the tags. In this case it is important to attach the tags at the “right” place in order to make it work sufficiently. Items

affected by this are products and packages containing metal, for example batteries, where the metal obstructs the tags.

Yet another problem regarding both tagging and packaging design is demonstrated below. A narrow and plain surface of the package is desirable in the case of tagging. But the fact that the tagging is done at the upper corner makes it very easy to rip or cut off the tag.



Picture 7, Oral B Sonic product with an insufficient tagging attachment.

#### 4.3.8 The tagging process

All involved retailers have the same opinion regarding tagging, it is a time consuming and costly action which they would be more than happy if it was done by the manufacturers, so called source tagging. Source tagging is already possible by all involved manufacturers and today it is done for special products and markets requesting it. However, this action results in a complex question - Who is going to pay for all the extra work? In addition, there is several security tagging systems on the market, not compatible with each other, making it even harder for the manufacturers to invest in new technologies.

An additional comment by retailers regarding source tagging of product is the visual effect involved with the soft and hard tags. The retailers assert that if the customers could see the actual tag they are remained of the security system and thereby less tempted to steal. Some retailers even point out that even if products were source tagged they would consider tagging products in the store to obtain the visual effect if level of shrinkage was increasing.

Regarding the development of the tagging system on the market, for example introduce smart tags like RFID, radio frequency identification, where the tag actually is able to communicate with a system providing real time information, the involved companies are more in to a wait and see policy. There are and have been some trails on the subject but as it is today the involved companies could not see the potential worth investing in the technique. However, based on the European Retail Theft Barometer from 2006 15%<sup>67</sup> of major retailers expected to pilot RFID in the following 12 months and a further 22%<sup>68</sup> in the next two years.

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<sup>67</sup> Retail research, 2008-08-20

<sup>68</sup> Retail research, 2008-08-20

#### 4.3.9 Safer boxes

Safer boxes are a type of plastic boxes designed to fit a product package inside and then sealed, see picture below. The safer boxes are used mostly to prevent theft. Through these the retailers make it harder for the customers to conceal the product or to open the product package. As for the tagging of product this action is done in store by the ordinary employees. Similar to hard tags the safer boxes are removed at the cashier and collected for re-use in-store. Concerning the safer box it self, some retailers would like to have boxes better suited for the products, in other words they would like to have product designed boxes.



Picture 8, Selected products in safer boxes.

#### 4.3.10 Plastic wrap

Another solution, requested especially by one retailer for high value products, in order to prevent customer contact with the actual product involves external package preparation through plastic wrapping.

The picture below shows a product sealed in a plastic package. As you can see the plastic wrap works as a type of blister package, which obstruct customers to open the product but still all information is available. One big different though, is the pre-made hole in the upper left corner for the hard tag, increasing the handling process in-store. In this case the whole re-packing process is done by the manufacturer. However, among the involved manufacturers this type of process was all done by sub-contractors due to the limited amount of products and the different demands. For the manufacturers this is seen as a problem, involving both increased handling time and additional cost regarding extra administration and sub-contractors. A further aspect to consider regarding this type of plastic wrapping is the fact that the plastic cover is not re-used. This result in a lot of extra plastic is implemented in the supply chain creating environmental issues.



Picture 9, A Nivea product in plastic wrapping with a pre-made hole for security tagging

Another example of a plastic wrapped product is the mascara from L’Oreal on the picture below. A big different compared to the above example is that in this case the plastic wrapping consist of just a thin layer of plastic shrink wrap and that it is attached by the retailer. By applying this to the mascara the retailer protects the product from shrinkage associated with product testing.



Picture 10, A mascara provided with a thin layer of plastic wrap.

#### 4.3.11 Customer preparation

Beside the customer preparation through the re-packing of products into plastic wraps there are some retailers requesting plastic banding of there products, the white bands across the Oral B Sonic package below. The purpose with this is the same as the two above examples, make it harder for customers designedly open a package and steal it content.

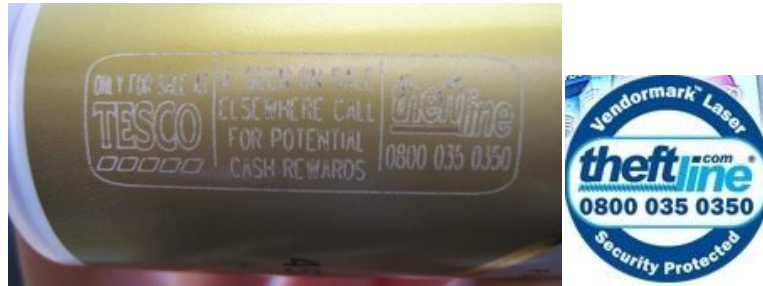


Picture 11, Custom prepared OralB Sonic package.



#### 4.3.12 Vendormark

In the fight against organisational crime where often large amount of products are stolen, and then re-sold on the black market, some retailers have started mark there products with a Vendormark. The picture below shows an example on a Vendormarked product and the sticker attached to the product in order to alert customers. As you can see the label is “printed”, inscribed with laser, direct on the product making it impossible to remove it without damage the product. The printed text point out which retailer this product belongs to and if you find it which number to call. The Vendormark also help retailers get back stolen products from the police since it is easy for them to distinguish which retailer the product belong to, a issue retailers often have problem proving today.



Picture 12, A Vendormarked product and the product sticker.

#### 4.3.13 Promotion packages

During the SCWs, retailers have highlighted two requests with regard to shrinkage associated with the special offers packages often found in stores. The problems involve how these packages are distributed and the in-store ready packages they often arrive in.

The first problem refers to the size of these packages. This type of packages is often large and quite high in order to draw the customers’ attention. As a result it is a good place to hide behind when, for example stealing something else. Moreover, this type of promotion packages is often distributed one by one on a pallet creating instable, non-effective and non environmental effective transportation.



Picture 13, Instable and non-efficient distribution of promotion packages.

The second request involves the amount of products often displayed in these packages. Since this is a one time used package just for the actual special offer the product security is not in focus, and yet it often involves a large amount of products. The special offer packages are also often entailing that

product protection system normally used could not be applied, mostly because it would not fit into the display package. A consequence of this is that this will be perfect opportunity for theft and thereby increased shrinkage.



Picture 14, Promotion packages involving too many products.

## 4.4 Results

One of the objects of the supply chain walks was to collect information about investments made in order to reduce shrinkage. The best way of showing this would be through specific numbers from retailers and manufacturers. Unfortunately this has been harder than I thought from the beginning mostly due to the fact that involved companies did not have the actual numbers or that it was seen as company secrets. Nevertheless, some number have been presented to me, see the below examples, which demonstrate that the anti-shrink work is helping.

- After that the mascara was re-packed in to a blister package a by retailer the sales level went up with +15% and at the same time the shrink level went down with -8%. Interesting is also that the same retailer has implemented the ECR road map in order to lower the overall shrink level. This was done a year ago, and for the mascara this together with the blister package has reduced the level of shrinkage with around 40%.
- Another example comes from a retailer that decided to put there Gillette razors in safer boxes. By doing this the level of shrinkage went down from 7% to 4%.

## 4.5 The Supply Chain

As mention in the theory section the supply chain is essential in the work of preventing shrinkage and without a well working supply chain co-operation and understanding the stock loss problem will be difficult to solve. In other words it is vital to understand the whole handling process for the actual package. In this section a summary regarding the handling process collected from the supply chain walks, describing what differentiate the hot products from ordinary merchandises in the FMCG business supply chain.

### 4.5.1 Safety Areas

To have some sort of extra control over hot products is a common measure among involved companies. For some companies the extra control is taken one step further by introducing special

safety areas and advanced machines where the selected hot products are stocked and packed. This type of action is mostly common within the retailers' business areas and especially at their DCs. The technique involves a special part of DC with limited employee access, extra security and regular cycle counting. Inside these areas specially trained staff are working, picking the high value product often into special cases or boxes. In addition, there are often special requests on how the employees should handle both incoming and outgoing high value goods, involving both item level counting and quality checks.

In store the safety areas can be a special room or just a sealed trolley with a locker. But the objective is the same, avoid undesired product connection.



Picture 15, Safety room at retailer DC and a sealed trolley at the back of a store.

In some cases to decrease the shrink level the companies have involved external control companies at the DCs and in these special safety areas. The idea of doing this is that they could move around freely, controlling both employees and deliveries. With his type of system the own employees does not need to be affected and the security team could take unpleasant decisions.

#### 4.5.2 Distribution boxes

In order to secure the products during transportation, prevent theft, some companies has introduced special boxes for there products. For some companies it involves all products and in some cases only for easy concealed high value products extra vulnerable to shrinkage. In the latter case, the boxes are often also covered with a lid and sealed.



Picture 16, Two types of special distribution boxes for high value products.



A good example of this special handling could be seen at the pictures above. As you can see, for example on the picture to the left, the boxes are sealed and put on a special dolly and banded to increase the stability. In order to know what is inside, since the boxes often involves a wide range of hot products, there is a bar code attached to the box containing item level information.

One retailer company take this process one step further by using special colour sealing, depending on the products inside the box, and special colour cases in store, see picture below. The idea of implementing a colour coded system is that as soon as a delivery arrives at a store the colour sealed boxes are put inside the matching colour case. Then only employees responsible for the actual product range have got access and could open the case, everything done in order to prevent internal theft.



Picture 17, Colour cases at retailer store and a close-up picture on a black colour sealing.

A negative aspect to the special boxes for high value products is that it is easy to identify where the high value products are located during transport and storage, which could facilitate an opportunity for theft. But according to the companies involved there had been no extra attention to these boxes.

#### 4.5.3 Loading and Picking strategies

Most shrinkage team have also implemented strategies in the areas of picking, loading and distribution. Jointly for this areas is that the actions should be done as fast as possible without errors and damages and thereby increased shrinkage.

Regarding picking strategies some retailers have lower the time pressure on there pickers in order to reduce the level of picking errors and dropping products. At the same time other retailers still have pickers working on time bonus and instead they have changed the DC layout to simplify the picking. To control the picking and making sure that the pickers get the right products for the chosen order all retailers have implemented some sort of scanning system For high risk products some retailers are using more advantage picking system as pick to voice or pick to light.

Loading strategies refers to actions where the picked products are loaded onto a trailer. All retailers have also in this area implemented some sort of scanning system making sure that the right order and products are loaded on the right trailer. However, regarding the loading of high value products at retailers DCs I have distinguished two different strategies, if there are any. The first example involves loading the high risk products on first when the focus is the best and with the products in front of the trailer it is harder to steal them. The second example used by retailers is loading hot products last. By

doing this it is easier to control the loading with CCTV and at store the products are first off and can be put in safety areas directly.



Picture 18, Products loaded at retailer DC and ready for transport.

#### 4.5.4 Direct delivery

In the work of reducing shrinkage in the supply chain some companies has started with direct deliveries to stores. It could be done by the manufacturer direct or involving external company like re-packing companies. The picture below shows a delivery from a manufacture that just arrived to a retailer DC. The delivery contains products in store ready boxes that will not be opened until they are arriving to the right store. The yellow label, see arrow at picture below, attached at each box contains information about which store each boxes belongs to and the content of the box.



Picture 19, Direct delivery boxes at retailer DC.

#### 4.5.5 In store supporting technologies

This section of actions, in store supports, is mostly focusing on security like guards, CCTV system and shelf technologies and works as a complement to the packaging related anti-shrink measures.

The guards and CCTV systems are used to supervise both customers and employees. The basic idea is that the system should prevent customers and employees from stealing and if something happens it could be used for identification

The shelf technologies to prevent shrinkage are technologies adapted to the shelf making it harder to un-noticed and rapidly remove one or several products. The picture below shows an example of a system found at a retailer, anti-theft pegs. This system involves a safety device, see arrows on the

picture below, preventing customers to take more than one product at the time. Other system tested at retailers is smart-shelves that sound an alarm when a product is removed. If more than one product is removed at the same time the signal get stronger to alert the store staff that something suspicious is going on. In both cases it is important that the package and shelf correspond to each other.



Picture 20, Examples of shelf security system, anti-theft pegs.

At one retailer they have implemented a Vensafe system. This system includes a Vensafe machine and products cards, everything implemented to lower the level of theft. Trough this system the customers will not obtain there merchandises before they actually bought it. The system works as follow – The customers select a product card similar to the product they want and pay as normal at the cashier. After they paid the product card is activated and could now be loaded into the Vensafe and the selected product will be accessible. The Vensafe machine could be loaded with selected products, in this case tobacco, some medicine and Fusion razors. From a packaging point of view this type of system involves a totally new situation. Most the measures mention before will be unnecessary since the packages will be locked into a machine and have no customer contact in store.



Picture 21, Product cards and Vensafe machine, outside and inside.

## 5 Analyse

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*In this chapter the findings from the Supply Chain Walks are analysed with the aim to answer the problem statements and to fulfil the purpose of the thesis. Pros and cons of the results and future ideas to improve the situation will be presented.*

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### 5.1 The Anti-shrink situation

During the supply chain walks interesting information has been collected from both retailers and manufacturers. The different visits have shown that shrinkage is a complex problem that has been taken more and more seriously over the last couple of years.

In the search for a reduced and acceptable shrinkage level the companies' introduction of an anti-shrink team appears to have good results. Not only has this introduction made a special group responsible for this area, an important aspect in it selves, there work have also highlighted the problem to get higher up on the agenda for both directors as well as ordinary employees working at lower levels in the hierarchy.

Best of all, there work seems to pay off. Among the companies involved in this study all of them believed that they had decreased there overall level of shrinkage during the last couple of years. Some companies were convinced that there was an overall lower level of shrinkage meanwhile others thought the amount of products lost were lower but the numerical data still showed an increase, due to better and more advanced control systems. Among the mentioned measures taken, regarding anti-shrink strategies, the most important features is better tools to work with, higher pressure on retailer store managers and employees and higher overall company focus. However, it is still important to remember that shrinkage is a complex problem constantly changing. An example of this is the increased level of shrinkage for some high value product as the economical situation is getting worse, an observation a retailer have made comparing shrink results today with six month ago.

Today the level of shrinkage among the involved retailers is estimated to between 0.6-3%. The difference in percentage does not seem too large but with the amount of money involved in the whole FMCG business it involves several million of Euros. During the supply chain walks I have not been able to identify differences among the involve companies that could explain this variation, and with my recently acquired knowledge about the ongoing anti-shrink work I do not believe that there is this type of big different between the involve companies. Based on this, there might be a bigger different than I though between how the companies are measuring there shrink level or the different definitions of shrinkage effect the results.

As mention before in the report the shrinkage level among the involved manufacturing companies supply chain are around 0.2-0.5%. From there own point of view most of them believe it is an acceptable level. During the supply chain walks the situation at the manufacturing companies are looking stable and I have no doubt in the low shrink numbers. After all, the level of handle products and the fact that less people/customers get in contact with the products within there part of the supply chain makes a big difference.

In this struggle against overall shrinkage, all involved companies agree that the biggest problem originate within the last part of the supply chain, at the retailer. Still it is important that the manufacturers do take this problem seriously. The retailers are performing product analysis and

products with too less profitability might be excluded from the product assortment. For the manufacturers this situation is especially critical at markets where retailers reorganize the store ownership to franchise stores. In these cases, the store managers could decide exactly what they want within there assortment, which have resulted in no or very limited amount of expensive products from high shrink brands. With regard to the different product brands found at retailers I assume that in the further we will see an even bigger difference between stores in different areas. In other words, stores from the same company will offer different product brands depending on the store location and level of shrinkage in the specific area.

During my visits I have heard some comments from retailers that the manufacturing companies do not take the shrink problem seriously. Despites many retailers believe I believe they do, at least the involved manufacturers in this study, and for example one manufacturer has spent more money on custom specific work than packing promotional items. However, I agree with the retailers that if the payment system works as they say, manufacturers get paid based only the amount of products ordered by the retailers, it could involve some problems.

### **5.1.1 Data bases**

An area where I have found a big different between the involved companies, which also might have affected the presented shrink level numbers, are the possibility of keeping track of the shrinkage information through databases. Some companies have very advanced and well developed systems while others not. Some of the advanced systems are really impressive with possible to track specific products or product categories to different stores or specific areas. By doing this the company could keep better control over the system and easier analyse the measures taken and if it is actually helps.

Within the area of data based information I see a great potential of development and it is also requested among involved partners in this study. If all companies could present up-to-date numbers it would be easier to analyse trends and the effects of the different measures taken. A data based information system could not only be used for internal work but also external, through involvement of partners in the supply chain in order to create better co-operation. With this type of system the different measures taken could be backed up by numerical data, and if necessary pressure could be put on partners by presenting the data. It would also, for example, be interesting to be able to compare data from different stores, from different companies, located in the same city area.

A consequence of the minimum numerical data available is that it has been hard to collect data on specific anti-shrink packaging work, as one of my objectives was. I have seen a lot measure taken but hardly any specific numerical data. Either they data do not exist at all or the problem of company confidentiality has obstructed me.

## **5.2 Anti- shrink packaging analyse**

A good example that anti-shrink packaging is a subject that is up-to-date and something the FMCG industry need to work with could be seen on the picture below taken at a retailer. This picture should work as a good motivation factor, for both packaging and manufacturing companies, in the work of developing new better packages, adapted to the shrinkage situation. In addition, from a customer perspective this is not something you what to see when shopping and definitely not something that would encourage you to buy the selected products. However, if there are no new solutions developed or the level of shrinkage somehow is reduced this is maybe something we have to get used to.



Picture 22, Anti-shrink measures found at a retailer.

As you can see on the picture the products are security wrapped or displayed in safer boxes. The biggest problem are that in some cases it is actually hard to identify the actual product due to all the security material and information, best example is the L'Oreal product at the bottom left corner.

During the supply chain walks there have been a difference between retailers and manufacturers regarding their view of the package, when it refers to anti-shrink packaging. The manufacturers are more focused on the actual package and the possibilities with it meanwhile that retailers seem to be more focused on how the package can be adapted to the existing external anti-theft techniques on the market. This difference does not come as a surprise since theft is the main source of shrinkage for retailers, and something they work hard to reduce, but sometimes it has been hard to get specific anti-shrink packages information.

The difference in focus is important to keep in mind when designing new packages and the communication aspect is a prerequisite to improve the shrink situation. Moreover, it is important to keep in mind that customers with an attention of stealing creates a situation hard to prevent.

An example of this has been found at one of my visits and could be seen at the pictures below. The first picture below shows an ordinary blister packaged Gillette Fusion with a hard tag, in other words it is well anti-shrink protected. Everything looks normal, but if you look closer you could see that the top of the razor is removed. The second picture shows the same package from behind, where the package has been cut open with a scissor or a razorblade in order to remove the top of the razor.





Picture 23, A fusion razor exposed to theft even if it is well anti-shrink protected.

### 5.2.1 Product protection

The features among all of the involved products that mostly refer to actual anti-shrink packaging are the blister package. The blister package is an attempt to minimize the level of shrinkage through the actual package design. However, this is not an optimal solution. Blister packaging has to compromise with the customers demand on an easy open package, making it not as effective as it could be. Further negative aspects with the blister package are that it is more expensive than ordinary paper packages and that it contradict with the ongoing environmental discussion, since it is made of plastic. The manufacturers are as far as possible using recycled plastic but some new material is needed in order to get the right stability and robustness.

An answer to the dilemma, a sealed blister pack that it easy opened, has recently been presented on the market. The new technology is called Controlled Delamination Material, CDM,<sup>69</sup> and is distributed by Stora Enso. The new technology involve a special glue, conductive polymers, that works as a normal glue until a small electrical current is passed through it, removing the properties of pasting the two surfaces together. With this new technology a totally sealed blister package could still be an easy opened package as it leaves the store. The process of opened the package is done by the cashier as they just need to drag the product through a deactivator, see picture below. The new technique also has a potential of making the blister packages more environmental friendly since it would be possible to collect the plastic package at the cashier and just provide the customer with the actual product.

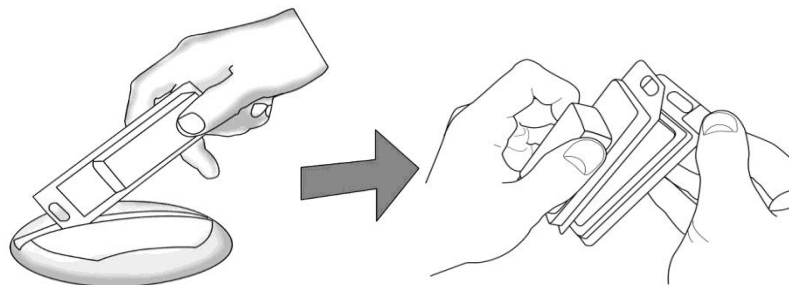


Figure 20, Controlled Delamination Material, CDM, which make the blister package an easy open package.

<sup>69</sup>Stora Enso, 2008-09-02

The next technique found, through the supply chain walks, to prevent customers to get in contact with the actual product is the plastic wrapping. During the supply chain walks there have been two types of plastic wrapping.

The first example found of this technique is the plastic wrapping seen on the left picture below. In this case the plastic wrap does fulfil its purpose, protecting the product and simplify the handling process through the pre-made hole for tagging, but there are some questions regarding the usage. This type of solution involves a lot of plastic and the plastic cover is not reused, creating environmental issues. Further more, as it is requested by a retailer you believe them to support there own solutions. Unfortunately it has proven differently, resulting in examples, right picture, where the extra work and money spent by the manufactures are useless since the package still is placed in a safer.



Picture 24, Plastic wrapped product and a product placed in a safer despite plastic wrapping.

The second technique and a good example were a retailer has taken advantage and adopted the anti-shrink techniques on the market to the actual product is the mascara on the picture below.



Picture 25, A good example of anti-shrink measures adopted to the product.

In this case the product is also covered with a plastic wrap. But compared to the example described above this cover is just made of a thin plastic film, still preventing customers to open the mascara. What furthermore makes this example a good example is that it also includes a Vendormark and that the retailer has tagged the product before the plastic cover is applied, making it harder to peel off and remove the tag. With this type of solutions the retailer will have a well protected product that



the customers still could touch and feel. The thin plastic wrap is also something I assume we will see more off in the future, both as package cover and actual product protection. A more environmental friendly material would be to prefer but until this is found the plastic will be used.

For the other techniques presented in this study, safer boxes, Vendormark and different customer preparations, which all in one way or the other certainly help to reduce the shrink level the actual package design does not need to be adapted. It is always important to co-operate but in this cases I believe it is more important that the techniques are adapted to the package instead of the other way around.

### **5.3 The tagging focus**

The tagging technique is an anti-shrink measure that I have found at all retailers and probably the subject that has been most discussed during my visits. The subject has included many interesting discussions were pros and cons have been evaluated. In some cases the tagging of product is actually the technique some companies are focusing most at with regard to anti-shrink work, and it is used either independently or integrated with other anti-shrink techniques. From a packaging point of view the tagging focus has sometimes made it hard to focus on the anti-shrink package design but I believe that next generation packages should include some sort of source tagging, a system that has a potential to solve many problems.

#### **5.3.1 Source tagging**

Jointly among the retailers, several positive aspects could be found if the tagging of products were done by the manufacturers, source tagging. By doing this all the extra work of tagging products in-store would be reduced and the problem with attached tags, covering important information or somehow wrongly attached, would be gone. If the products where source tagged the tagging process will be made during the manufacturing process or packaging process, resulting in tags placed inside the actual package or product. This action would also reduce the fact that customers just peel of the tags in store and steal the product. In order to obtain a source tagging system of products in the FMCG business there are two cases to consider.

Firstly, all the retailers need to have the same sort of tagging system. Today all retailers are using security tags but from different system not interacting with each other, meaning that a tag that works in one store sometimes does not work in another. Because of this, the volumes for each tagging type are not large enough to make it possible for the manufacturers to invest in the different technologies. To make this happen the retailers need to unite around a one system, for example a tagging alliance, or that the security companies see the potential of this and “open” up there systems, making every tag work in every system. If this was done the industry would have a totally new situation and the pressure would be moved towards the manufacturing companies. For example, the retailers could collect and pass a list of their top-shrink products to the manufactures, requesting them to get them source-tagged. This approach would not work today, if retailers are not willing to pay extra for it, or if it was done by one retailer. However, the manufactures would find it hard to ignore the source-tagging request if it comes from several of the largest retailers on the market together with one tagging solution working at all retailers.

A second solution to the problem found during the supply chain walks are if the manufacturers could come up with a tagging system and offer it to there customers, the retailers. During the interviews,

retailers have stated that they would consider the fact to update there systems if the manufacturers could come up with a robust and cheap suggestion.

### 5.3.2 Visual effect

With the start of source tagging yet another problem occur, the visual effect of tagging. This is an effect that some retailers have pointed out and believe are important, also involving other external technologies. There are no specific numbers presented to me showing that the visual effect actually work but I believe it is an aspect you should consider but not focus too much on.

From a packing point of view I believe there is a rather easy solution to this request. If the products were source tagged the manufacturers would know that there products are protected and thereby they could develop new packages, for example with a sign or a text message alerting the customers. This together with some sort of shelf security sign should be as effective as that actual tag but it is an interesting effect that should be further investigated.

### 5.3.3 The tagging dilemma

The complexity within the source tagging dilemma - Who is going to pay for what? And why?, could be described with the help of the Prisoner's dilemma<sup>70</sup>. The theory constitutes a problem in game theory, originally framed by Merrill Flood and Melvin Dresher in the 1950, and explains the evolution of co-operation, in this case retailers versus manufacturers. The theory allows the players to achieve mutual co-operation, but it also allows for the possibility that one player exploit the other, or the possibility neither will co-operate. The key question in this particular situation is how co-operation can develop in situations where each individual group has an incentive to be selfish.

Manufactures Retailers	Co-operate	Defect
Co-operate	win-win R-3, M-3	lose-win R-0, M-5
Defect	win-lose R-5, M-0	lose-lose R-1, M-1

Figure 21, The tagging dilemma between retailers and manufacturers in the FMCG business

In figure above the different situations are described. Both retailers and manufacturers will lose if the situation continues as it is today and both would benefit from a co-operation. In the situation were one organization decides to co-operate while not the other, investments made in developing standards and new systems would be out of use. The numbers in the figure is just to illustrate the positive and negative effect different outcomes would have.

<sup>70</sup> Wikipedia, 2008-08-30

## 5.4 The package development process

### 5.4.1 Perfect package

During the supply chain walks both retailers and manufacturers have presented ideas to me about what perfect package should look like. I have tried to collect all of the different opinions and will here try to present a package that would work well. The different request does mostly come from the retailers however the information from the P&G article presented in the theory section does seem to agree well with the actual situation. A well working package should fulfil the following;

- ◆ Easy to identify the product, involving both customers and employees, without making it possible to get in contact with the actual product, tamper secured.
- ◆ The package should contain one single product and for some products an identification system is necessary, distinguish products from the same brand from each other. This to minimize the errors associated with control counting and picking.
- ◆ The packages need to interact with current anti-theft equipments. For example if the tag is not included in the package, which is preferred, it should be easy to attach it without covering information. A plane not too thick area is preferred for the hard tags.
- ◆ The packages need to be robust in order to tackle the handling process.
- ◆ Slightly bigger than needed in order to make it harder to conceal it but not too big as the shelves are not adapted to the bigger packages creating problems like inefficient storage and display of products.
- ◆ Contain “right” material not interacting with security tags and environmental issues.

As stated before in the report, the co-operation along the supply chain is essential in order to develop new well working anti-shrink packages. The process is complex and there are a numerous of requested demands to fulfil. In order to break down every request and sort out everything I believe that a standard anti-shrink packaging development map is necessary. Based on my experience from the different supply chain walks figure 25 bellow represent an example how the development process might look like. The idea is to use this map to develop the already existing packages further to help reduce the level of shrinkage for the chosen product.

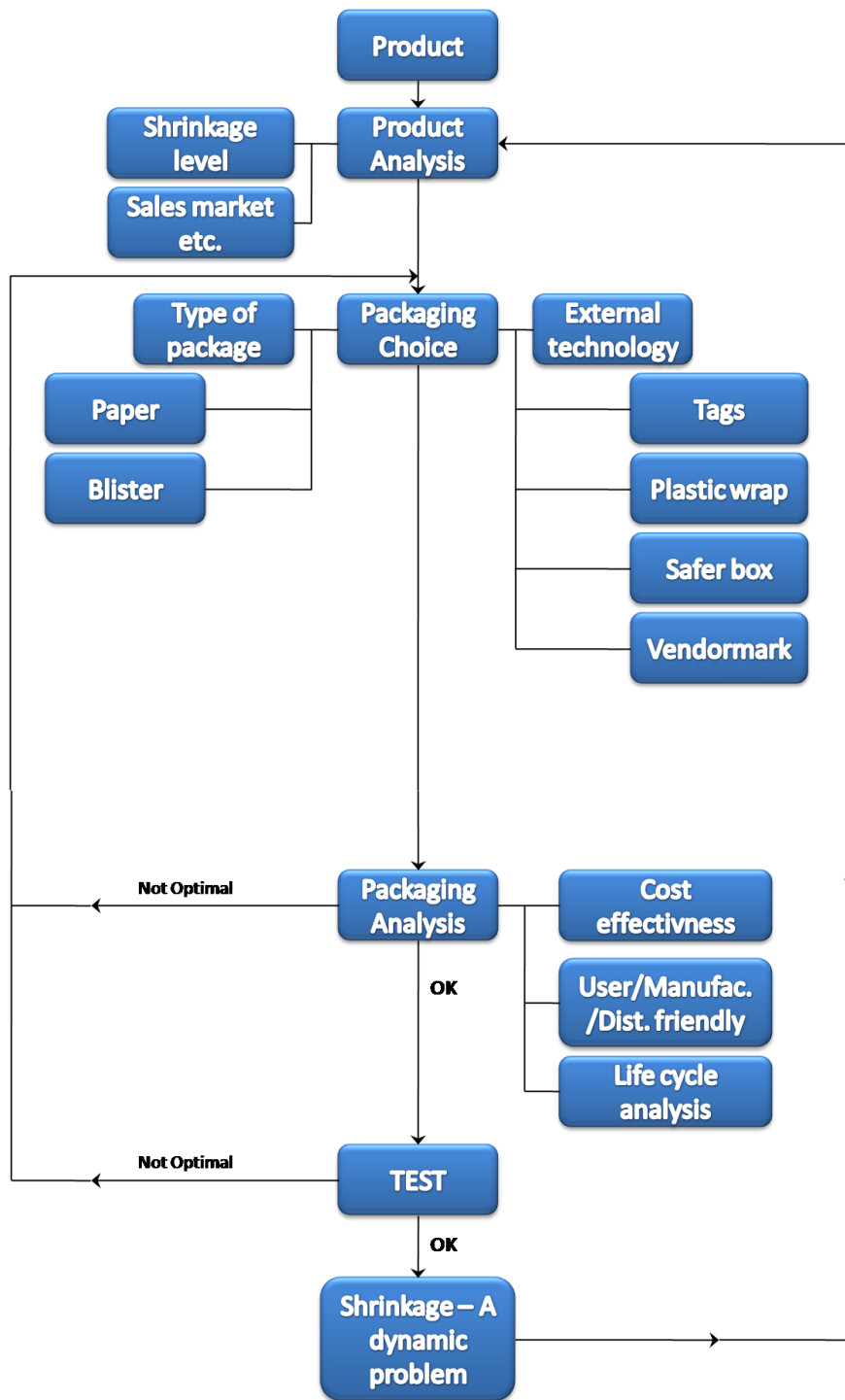


Figure 22, Anti-shrink packaging development map.

In the following section the steps in the packaging development map will be described;

- Product analysis – The first action to consider when developing an anti-shrink packaging is the actual known shrinkage level for the product and in which markets it will be sold. This could differ from different markets and even locally but the information is essential. With the right information the packages demands could be set and the development process could continue. To simplify this process it could be easier if not focusing on individual

products instead divide the products into different categories. Never the less there are some products always highlighted as special vulnerable to shrinkage.

- Packaging choice – After gathered all the information surrounding the product it is time to choice the package. The first question asked in this step is if it is necessary with special measures. Is the answer yes, the developer have two choices to consider. Should a new package be introduced or the existing package changed, for example introduce a blister package, and/or should the new package be adapted to the external technologies on the market.
- Packaging analyse – With the right package chosen it is time to analyse the packaging with regards to the three areas of cost effectiveness ,handlings friendliness and life cycle aspects. A right chosen package is accepted along the supply chain fulfilling all involved partners individual request, for examples see figure 10. Every package should strive towards fulfilling the environmental demands stated in section, Life cycle analyse, of the report. Last but not least the package has to be cost effective not driving unnecessary cost in to the supply chain. The developer should keep in mind the figure 11, explaining the circumstances of packaging cost and level of reduced shrinkage. If the package is consider sufficient it is time to test it in the actual world and if not a new package have to be chosen.
- Test – The final stage in developing an anti-shrink package is to see if the package works in the real supply chain. Some small adjustments are always necessary but if the package is overall accepted the first part is over. If not, a new package has to be chosen. However, Shrinkage is a dynamic problem constantly developing resulting in a need to redo the process every now and then.

## 5.5 Supply chain

As showed in first figure in the beginning of the theory chapter the supply chain co-operation is positioned as the ground level in struggle against shrinkage. The illustration as proven to be well adapted to the reality as most of the involved companies and interviewed employees has highlighted external co-operation, as something everybody have to become better at and a prerequisite to reduce shrinkage.

The objective of a well working supply chain involves both the overall shrinkage situation as well as the anti-shrink packaging situation. An example from anti-shrink packaging perspective that co-operation could help reduce shrinkage is the problem described with source tagging. Another example is the one described above and seen at figure 23, a product placed in a safer even though it is plastic wrapped by the manufacturer.

Regarding all the extra work in the supply chain with special handling processes for high value products it is important to find an acceptable level that is still cost effective. As shown in the theory section, total cost approach, there is an optimal level for package protection where the cost and level of damages products are both acceptable. For special handling processes the same trend could be discern. There is an optimal level of special handling where the handling process still works efficiently to a reasonable cost and at the same time the level of shrinkage is acceptable. At one retailer, for example, they have solve this problem involving three difference system of ordering and distribution of there products. The first system involves no connection between retailer and supplier, the second is a bit more advanced as the supplier has some insight over the retailer store orders and the third

and most advanced, full co-operation between retailer store and supplier, is the direct delivery of product from supplier to retailer store.

In order to measure the effectiveness and if the level of shrinkage is reduced in the supply chain not only more numerical data would be helpful. In this cases implementation of KPI, key performance indicators, would be supportive. The idea of introducing this is to collect information and data from measures and then compare this data to a standard for a specific performance indicator. By always measure the same actions trend could easy be distinguish trends and there would be result if the measures have an effect or not.

## **6 Conclusion and recommendations**

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*This chapter concludes the findings of this thesis. In order to remind the reader of the purpose of the thesis this will initially be repeated. Finally recommendations on further studies will be provided.*

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The objective of the supply chain walks, following selected products, was to investigate and collect up-to-date information about shrinkage in the FMCG business. As the project is performed together with SCA packaging, during the whole project the intention has been to search for information involving the package, direct or in-direct, which could contribute to the development of anti-shrink packages in order to reduce the level of shrinkage. After performing all of the visits and interviews my conclusion is the following.

There is no doubt that the shrinkage problem taken seriously by the companies in the FMCG business, at least for the companies involved in this study. Most of the problems associated with shrinkage have been found at the retailers, a situation not surprising at all. Unfortunately the reality has shown that the shrinkage problem could be linked to products getting in contact with customers for the first time and for some products the retailer part of the supply chain is the first time the product is separated from its group package since production. Further more, I believe that both the wide range of products and the amount of products handled by the retailers have an effect making it easier and more tempted to steal.

By this I definitely not mean that the shrinkage problem is a retailer problem. However, I believe that the retailers have to accept that it is within there part of the supply chain the biggest problems occur. From the manufacturers point of view it is important not to just accept the situation, see it as a retailer problem which involves that products will still be supplied even if they are stolen at the retailers. The manufacturers need to take there responsible too. A situation that has become more obvious in some markets involving franchising stores.

The manufacturing companies' role in the work against shrinkage should be identified as supporting activates to the retailers. It is important that they, the manufacturers, understand the problems there products are exposed to and constantly working with improvements to support the retailers and to simplify the handling process, a willingness I have seen in the study but need constant development. Overall, I believe that the key to a reduced level of shrinkage is co-operation. Both retailers and manufacturers should aim for a win-win situation.

The fact that co-operation and communication across the supply chain is vital has been pointed out several of times during my visits. Companies need to stop implementing new ideas and technologies to reduce shrinkage without consider the whole supply chain. Moreover, the lack of numerical data to support the ideas and technologies used makes it hard to obtain a cost effective reduction of the shrinkage level.

From an anti-shrink packaging point of view I have distinguish a different between the involved retailers and manufacturing companies, as mention earlier in the report, when it comes to the actual package and a development of anti-shrink packages. I believe that this differ in opinion could be a consequence of two things. Maybe the retailers do not se the potential in the actual package and are too focus on the external technologies or maybe the actual package does only play a minor role in the work against shrinkage. In any case, the situation has made it quite harder than I thourgh to

identify special anti-shrink packaging features, but some measures have been distinguishing as involving more potentials than others.

The blister package is one of them. The idea of this package is good; you can easily identify the product without getting in contact with it and with the new CDM technology the package could be totally sealed. To become an even better package it should include a tag, source tagging, and be made of a more environmental friendly material than plastic without losing its characteristics, for example impossible to rip apart.

The plastic wrapped mascara in picture 10 is another example. In this case the retailer has used several known anti-shrink features plastic wrap, Vendormark and security tagging at the same time, creating a well protected product. A potential to become even better is if the tag was attached inside the product and if less plastic were used, for example just over the opening to prevent customers to test the product.

In both of the above examples I would like to include the tag inside the actual product. However, to obtain this the FMCG industry needs to solve the tagging dilemma, different tagging systems not interacting. I believe this is one of the most important issues to work out in order to develop an anti-shrink package.

Furthermore, aspects regarding a potential anti-shrink package should involve a system to separate products, from the same product family, from each other, involving both item level and group level packages. A problem resulting in counting failures and administration errors, an area many believe is an underestimated source to the high shrinkage numbers.

From a packaging point of view I could see a potential of involving RFID as part of the product package. With a system like this it would for example be possible to obtain intelligent packages. A tag linked to a sensor could then provide data on whether the product has been tampered with at any stage, the status of the merchandise, inventory control and location of the product during transportation.

Important to keep in mind is if the situation is not improving, forcing more and more companies to install systems like the Vensafe, totally blocking customer contact with high value products. This will create a totally new situation regarding the development of anti-shrink packages. In this case the package will only play a minor role as it just has to hold together the products as cheap as possible.

As a future development to reduce shrinkage both manufacturers and packaging development companies should work more with system solutions, including an anti-shrink package and an anti-shrink shelf, for high value products. The idea with an anti-shrink shelf is to prevent customers to take several products at once and could alert customers that the displayed items include special security surveillance.

Last but not least the companies in the FMCG business need to realise that the shrinkage problem could not be totally eliminated, it just has to reach an acceptable level. Based on my experience described in the section anti-shrink packaging analysis, the stolen razor despite all the security support, I think that the business should keep in mind that if a customer entering a store with an attention to steal he/she will always be able to steal. With this in mind, I wonder what the situation would look like if the companies in the FMCG business stopped investing money in anti-shrink



measures and extra work and just divided the shrink related costs and cost for lost products between retailer and manufacturers.

### **6.1.1 Future studies**

As described earlier this project is a first part of a bigger study initiated by the ECR Europe shrink group that will be finished around March 2009. For future studies regarding the anti-shrink packaging study the ECR group will analyse the results from the supply chain walks and then move on investigate interesting areas even further.

Based on the my experience that I have gathered during this project the following areas, see below, would be interesting to dig deeper into for both SCA packaging and for the whole ECR organisation.

An area where I defiantly find it necessary to investigate further is my problems with collecting shrink related numerical data on implemented measures. Maybe the data does not exist or it requires more senior staff members to get hold of it.

A second problem linked to the problem with information access is the effect of the external security applications used. As described in the report most of the anti-shrink measures are involving some sort of external applications. In order to develop new better packages it would be interesting to measure the effect theses applications really have, both concerning the shrinkage level and sales level. Moreover, I would not be surprised if you are able to distinguish a difference between men and woman.

During the supply chain walks some retailers have pointed out that the paying systems between manufacturers and retailers as a problem, mostly because the manufacturers get paid for the amount of products ordered by the retailer. This means that manufacturers still makes money even if all of there products are stolen. As a result of this it would be interesting to investigate if a new paying system not only based on the level of products ordered by the retailer would affect the manufacturers' engagement in the shrinkage problem.

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## 9 Appendices

### 9.1 Appendix 1 - Discussion guideline for ECR Shrinkage project, Manufactures

#### 9.1.1 Questions for a general overview:

1. Name of the company/department and your position within the company?
2. Draw a general overview of the manufacturing/handling process of the selected product and describe it?
3. How do you define shrinkage, what is included and not included in your shrink definition?
4. What packaging features do you think are the most important in order to reduce shrinkage?
5. Have you got any specific company policy regarding shrinkage?
6. Have you taken any specific actions to reduce shrinkage?
7. If you compare the shrinkage problem today with five years ago, is it a growing problem or is it getting better?
8. Which product category is most vulnerable to shrinkage due to bad packaging design?
9. Could you estimate the shrinkage problem relative your sales volume/shipped volume, % and cost?
10. Could you estimate the shrinkage problem for this specific product within your organisation, % of production and/or cost of waste, in the following key areas:
  - a. Manufacturing
  - b. Handling process, (loading, unloading and transportation)
  - c. Storage
  - d. Re-packing
11. What is your experience about the communication within the supply chain? Do you share best practise? From 1 to 5 (1=no communication, 5=very good communication).
  - 11b. How does it work, meeting, work shops or seminars?

#### 9.1.2 Questions regarding the manufacturing process:

12. Where and in the production/handling process do you think the biggest shrinkage problems occur, with regard to this specific product package?
  - 12b. Describe why this area is a problem.
13. List the most common problems within your production/handling process, with regard to this specific package?

13b. Describe the listed problems.

13c. Could you recommend some improvements?

14. Have you taken any actions to reduce shrinkage generated by bad packaging design?

14b. If yes, what type of actions and the cost of these?

14c. What was the affect of these actions?

14d. How have you measured this?

15. When a group package is used do you think it support the primary packaging?

15b. Describe why/why not.

15c. Could you recommend any improvements.

16. What is the best/worst package you have worked with, with regard to shrinkage?

### **9.1.3 Questions regarding product storage and distribution:**

17. Where in the storage/distribution process do you think the biggest shrinkage problems occur, with regard to this specific product package?

17b. Describe why this area is a problem.

18. How often do find damaged packages from 1 to 5 (1=several times a day, 5=a few products per month)?

18b. List the most common reasons.

18c. Could you recommend some improvements?

19. Have you got any specific picking/storage/loading/distribution strategy in order to minimize the problem with shrinkage, e.g. for high shrink products?

19b. If yes, describe it and possible improvements.

20. When a group package is used, does it support the storage/handling process?

20b. Could you recommend any improvements.

21. Do you some how prepare the packages for transportation?

21b Describe how.

21c. Could this problems be eliminated by a better packaging design?

22. During transportation, is the product ever re-packed together with other products?

23. If a third party contractor is involved, who pays for shrinkage occurring during this process?

24. Have you got any reverse logistic strategy if products are damage during transportation?

24b. If yes, describe the process,

24c. Who pays for transportations?

24d. How does it work if a third party contractor is involved?

## **9.2 Appendix 2 - Discussion guideline for ECR Shrinkage project, Retailers**

### **9.2.1 Questions for a general overview:**

1. Name of the company/department and your position within the company?
2. Draw a general overview of the manufacturing/handling process of the selected product and describe it?
3. How do you define shrinkage, what is included and not included in your shrink definition?
4. What packaging features do you think are the most important in order to reduce shrinkage?
5. Have you got any specific company policy regarding shrinkage?
6. Have you taken any specific actions to reduce shrinkage?
7. If you compare the shrinkage problem today with five years ago, is it a growing problem or is it getting better?
8. Which product category is most vulnerable to shrinkage due to bad packaging design?
9. Could you estimate the shrinkage problem relative your sales volume, % and cost?
10. Could you estimate the shrinkage problem for this specific product within your organisation, % of products and/or cost of waste, in the following key areas:
  - a. Handling process, (loading, unloading and transportation)
  - b. Storage
  - c. Re-packing
  - d. In-shop problems
11. What is your experience about the communication within the supply chain? Do you share best practise? From 1 to 5 (1=no communication, 5=very good communication).
  - 11b. How does it work, meeting, work shops or seminars?

### **9.2.2 Questions regarding handling/storage:**

12. Where in the handling/storage process do you think the biggest shrinkage problems occur, with regard to the specific package?
  - 12b. Describe why this area is a problem.
13. List the most common problems you have experienced with regard to this product package?
  - 13b. Could you recommend any improvements?
14. Have you taken any specific actions to reduce shrinkage generated by bad packaging design?

- 14b. If yes, what actions and the cost of these?  
14c. What was the affect of these actions?  
14d. How have you measured this?
15. How often do you find damage packaging in incoming deliveries from 1 to 5 (1=never, 5=every delivery)?  
15b. Describe the type of damages you could find?  
15c. What happens with these products?
16. If the product is stored in a special distribution package, what do you think about it, does it simplify your handling process?  
16b. Could you recommend any improvements.
17. Have you got any specific storage/storage/loading/distribution strategy in order to minimize the problem with shrinkage, e.g. for high shrink products?  
17b. If yes, describe it and possible improvements.
18. Do you some how prepare the product package before sale?  
18b. Describe how.  
18c. Could you recommend any packaging design improvements.
19. Do you experience customer complains about the packaging and how often from 1 to 5 (1= never, 5=every day)?  
19b. List the most common reasons.
20. Rate the information quality, how easy it is to identify the product and what it contains, on the specific product from 1 to 5 (1=very hard to find information, 5=very easy to find information)
21. Do you consider this product package suitable for secure open sales storage (blistering, tagging and size)?  
21b. Could you recommend any improvements?
22. Have you got any special orders about how to promote this product to the customers?
23. Have you got any reverse logistic strategy if products are damage during transportation?  
23b. If yes, describe the process,  
23c. Who pays for transportations?  
23d. How does it work if a third party contractor is involved?
24. Describe the overall best/worst package you have experienced and why?