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Messenger Package – Integrating Technology, Design and Marketing for Future Package Communication

| Final Report

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Abstract

The Messenger Package research project aimed to intensify the functioning of packaging as a messenger and to provide solutions and guidelines for more efficient and intensive package communication. The project considered package communication from multiple angles, focusing on integration technology, marketing and design know-how. Due to the multidimensional character of packages and package communication, cooperation between different fields plays an increasingly important role in the development of packaging as a messenger to better serve the needs of both consumers and companies. The different research topics in the project supported and complemented each other by bringing together the different aspects of package communication: consumers' views on packaging, a design perspective on packaging and the technological aspects required for more efficient package communication.

According to the project results the current consumer attitudes towards food packaging are more positive than a decade ago. The findings also show that a growing number of consumers value packages that are ecological, yet prestigious in design; the ecodesign segment expanded from 21% to 33% over the studied time period.

The project also concluded that customized packaging designs offer plenty of ways to add value to packaging. By using very flexible digital production, last-minute changes can be made to add relevant, up-to-date and highly focused information on packages, e.g. for different consumer segments. This is a great opportunity while keeping in mind that package communication is more and more responsible for making a product desirable to consumers and selling the product.

The principal goal of a package as a messenger is to support the product: draw attention to the product, make the product desirable, inform about the

product and build a brand relationship. Packaging communication is not only text and images on packages; it refers to all the messages packaging sends to consumers. These messages are the result of combinations of different packaging elements and factors influencing the communication. All the factors need to be considered in order to achieve a holistic understanding of package communication and successfully fulfil the goals of package communication.

Package design is also a crucial element in strategic branding. It can enhance the desired brand image and build the brand to meet current consumer preferences. Packaging provides a versatile means for brand owners, buyers and users alike to communicate what is meaningful for them.

The project clearly evidenced that good package design is a result of the skilful and effective combination of market, design and technology knowledge and expertise. The rapid changes in technology, information and the economy call for new competences such as skills in critical thinking, problem solving, decision making and teamwork at the intersections of different disciplines.

Preface

The Messenger Package (VIP – Viestivä pakkaus) research project was carried out during the years 2008–2011 in cooperation with three research partners: VTT Technical Research Centre of Finland, the Aalto University IDBM Programme and the Association of Packaging Technology and Research (PTR).

The project was supported by the Finnish Funding Agency for Technology and Innovation (Tekes) and the following participating companies: Fazer Bakeries & Confectionery, Fiskars Brands Finland Oy Ab, Kekkilä Oy, M-real Oyj, SEK & Grey, Stockmann Oyj Abp and Stora Enso Oyj.

The project was governed by a Steering Group consisting of the following members: Anna Alasmaa, Tekes; Jalliina Järvinen (chairman) and Mari Hiltunen, Stora Enso Oyj; Kati Randell, Fazer Bakeries & Confectionery; Olli Turunen, Fiskars Brands Finland Oy Ab; Eila Pääskynkivi, Kekkilä Oy; Riikka Joukio, M-real Oyj; Sofia Uitto, SEK & Grey; Markus Luhtala, Stockmann Oyj Abp; Margareetta Ollila, PTR; Markku Salimäki, Aalto University; and Pia Qvintus, VTT.

The project was coordinated by Elina Rusko, VTT. Technology tools for more efficient package communication were studied by Elina Rusko, Jali Heilmann, Panu Lahtinen and Marja Pitkänen, VTT. Consumer preferences and attitudes concerning packages were studied by Virpi Korhonen, PTR. Strategic package design was studied by Sanna Heiniö and Toni-Matti Karjalainen, Aalto University. In addition, two IDBM student projects were conducted during the project and three master's theses were completed in collaboration with the project.

Initially, the idea for the project arose from the challenges of the messenger role of packaging identified in earlier packaging development studies at VTT. Interest towards the subject was also seen in a forecast study on packaging-related research questions made by the Association of Packaging Technology

and Research in 2006. Over 50 per cent of the suggested research subjects in the study were related to package communication issues.

In 2009, the Messenger Package project joined Futupack, a network founded by the Finnish Funding Agency for Technology and Innovation. The network, in which six research projects were carried out, aimed at promoting the business of the packaging industry by combining the competences of different actors in research and development related to packaging. Based on the results from the Messenger Package project and the collaboration with the Futupack network, it is beneficial and necessary to integrate design, marketing and technology knowhow in the multidisciplinary field of packaging.

Espoo, 30.5.2011

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1. Messenger Package Project (2008–2011)

Chapter 1 presents the background, scope and objectives of the Messenger Package project (VIP – Viestivä pakkaus) and introduces the aim and contents of this report.

1.1 Introduction

The Messenger Package project considered package communication from multiple angles, focusing on integration technology, marketing and design know-how. Due to the multidimensional character of packages and package communication, cooperation between different fields plays an increasingly important role in the development of packaging as a messenger to better serve the needs of both consumers and companies. Therefore, the aim of the project was to bring different fields closer and by understanding others give more comprehensive and integrated solutions for package needs – both functional and emotional. Such integrated solutions and the results of the project will benefit brand owners, designers and other stakeholders of package development.

The project comprised three key research topics:

- (1) technology tools for more efficient package communication,
- (2) communicative and strategic aspects of package design, and
- (3) consumers' preferences and attitudes to packages.

The project was conducted in cooperation with VTT Technical Research Centre of Finland, the Aalto University IDBM Programme (International Design Business Management Programme) and the Association of Packaging Technology and Research (PTR).

The project was funded by the Finnish Funding Agency for Technology and Innovation (Tekes), VTT and the participating companies. The participating companies were Fazer Bakeries & Confectionery, Fiskars Brands Finland, Kekkilä, M-real, SEK & Grey, Stockmann and Stora Enso.

1.2 Project Scope, Objectives and Schedule

The importance of packaging as a source of information is unquestionable. Packaging is the messenger of product information, marketing communication, safety information and messages for logistical purposes. Its proximity to the end user is what makes packaging the single most effective element of consumer communication and a source of competitive advantage. Packaging is an informative, practical and emotional way to send messages, create added value and impact on consumers. On the other hand, package communication involves great challenges, such as the usage of the correct amount and quality of messages, competition for consumers and authenticating products. The large amount of information that has to be presented in a limited space is a challenging equation for companies, bearing in mind that good readability and clarity are essential for a consumer. There is a need for innovative ways to approach these challenges.

The Messenger Package project aimed to intensify the functioning of packaging as a messenger and to provide solutions and guidelines for more efficient and intensive package communication. The different research topics in the project supported and complemented each other by bringing together the different aspects of package communication: consumers' views on packaging, a design perspective on packaging and the technological aspects required for more efficient package communication.

The objectives of the project were:

- to clarify the significance of different visual and haptic characteristics as part of package communication,
- to study consumer attitudes to packaging (communication, material, technique) and the factors affecting the consumer value of packages,
- to study packaging as an element of strategic brand identity,
- to study on-demand package printing and the possibilities to use package customization in target group communication, and
- to develop and test new packaging concepts (in Finland and export markets) and compare cultural differences.

The general scope of the project – building a holistic view on package communication for future package development – was concluded on the basis of integrating the results from the different research themes of the project and by close

cooperation in the project. The research themes of the project are shown in Figure 1.1. As shown, the project comprised three key topics and areas under which the above objectives were approached. Even though the three partners of the project each had their specific areas of interest, much attention was paid to the integration of market, design and technology knowledge and expertise created in these areas. Furthermore, an integrated approach was utilized in the creation of the new package concepts.

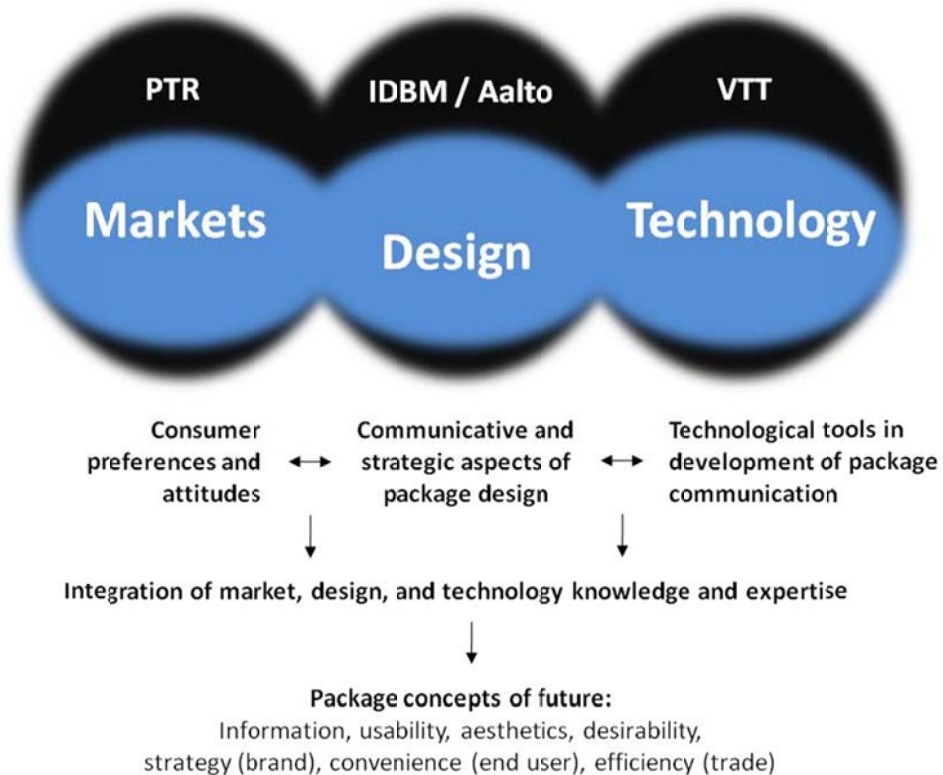


Figure 1.1. The scope and sub-areas of the Messenger Package project.

Figure 1.2 in turn illustrates the schedule of the project and its various sub-projects, which are next briefly described in Chapter 1.3.

1. Messenger Package Project (2008–2011)

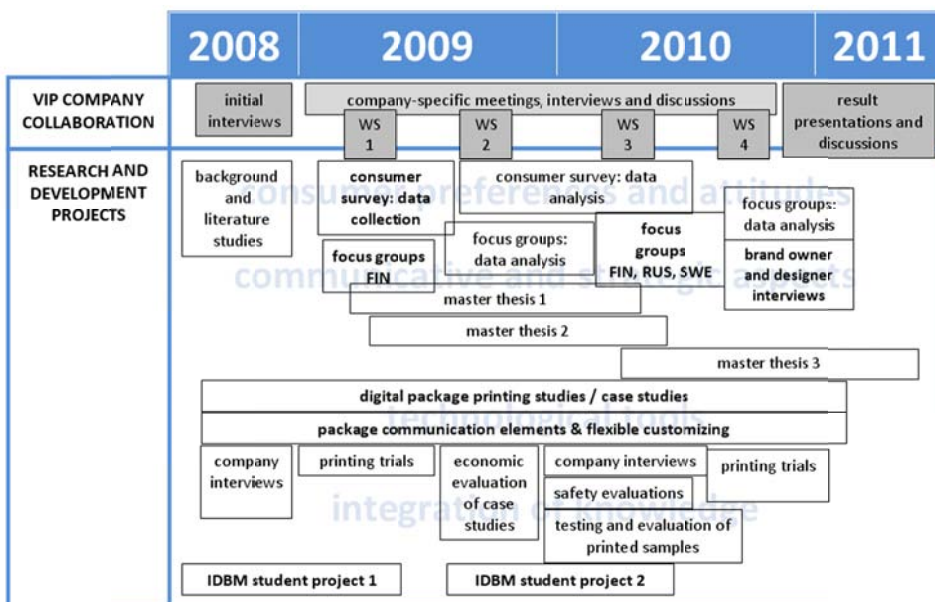


Figure 1.2. The schedule and sub-projects of the Messenger Package project.

1.3 Sub-projects and Methods

The sub-projects, as presented in Figure 1.2, are briefly described below. The results of the project are more extensively discussed in Chapters 2–6. The sub-projects also resulted in several other publications (conference papers, theses, reports, etc.) that are listed at the end of this report. The results were also distributed through a number of workshops and Steering Group meetings of the project, as well as international seminars and conferences.

1.3.1 Company Interviews and Workshops

During 2008, 2009 and 2010, the researchers met, both individually and as a group, with partner companies several times to either carry out interviews or discuss a particular topic. The meetings were initiated either by the researchers or by the partner companies. The information exchange was mutual: researchers gained information on the practical side of packaging and the companies received customized research and packaging trends updates.

During autumn 2010 and early 2011, researchers visited nearly every company to hold a 1.5–2-hour long presentation about the overall and company-specific results of the project.

Four half-day workshops were also organized to discuss and explore new packaging ideas with the whole Messenger Package group (including students, researchers and company partners).

1.3.2 Consumer Survey

The main data for the sub-area “consumer preferences and attitudes” was gathered and analyzed through a consumer survey performed by Virpi Korhonen of PTR.

The aim of the consumer survey was to profile consumer segments with regard to the value experienced from packaging. The research focus was on packaging materials and technologies and the means to produce value for consumers. The survey data was collected in Helsinki and Tampere, Finland, in spring 1998 (N = 460) and 2009 (N = 378). The data were collected by non-probability sampling of consumers of various ages and phases of life. The respondents were recruited at high schools, university campuses, family clubs and adult education centres. The research questionnaire included structured questions regarding package and recycling attitudes, material perceptions, packaging preferences and recycling behaviour. The respondents also evaluated a number of package samples in order to validate the value segments developed in the study.

The samples of 1998 and 2009 were collected to correspond to each other in terms of the respondents’ background. In total, 40% of the adult respondents were aged 19–29, 37% were aged 30–49, and 23% were aged 50–76 years. Of the respondents, 82% were women and 18% men. One-third of the respondents had a higher-level education, while 25% had a basic education and 42% an intermediary education. Two-thirds of the respondents lived in a household of 1–2 persons.

1.3.3 Focus Group Studies

To gain knowledge within the sub-areas “communicative and strategic aspects of package design” and “consumer preferences and attitudes”, two sets of focus group discussions were organized in Finland, Russia and Sweden by Sanna Heiniö of IDBM and Virpi Korhonen of PTR. A total of 84 people participated in the discussions in 2009 and 2010.

1. Messenger Package Project (2008–2011)

The first round of focus group discussions took place in Finland in May-June 2009 and the second round in Finland, Russia and Sweden in April-June 2010. The purpose of the first focus group discussions in 2009 was to study the product–package relationship and meaning creation on the basis of packaging. Five group discussions, comprising 24 female participants (including the pilot study), were held in Finland (Helsinki and Kristiinankaupunki).



Figure 1.3. The structure and schedule of focus group discussions 2009.

The second round of focus group discussions was conducted in three different countries and the discussion structure was different for each country. The second round of the discussions was coordinated by Virpi Korhonen and Sanna Heiniö and several people were involved in conducting the study as well as moderating the discussions.

The purpose of the second round of focus group discussions was to:

- (1) understand the impressions and associations packages create,
- (2) recognize the context of use for different packages,
- (3) identify value-creating package design elements,
- (4) find ways to improve brand value and to reinforce brand identity with packaging, and
- (5) study cultural differences and similarities.

Altogether 60 people participated in the discussions in 2010 (23% men and 77% women). Before the actual focus groups, the discussion structure was tested with

two pilot tests in April 2010¹. Figure 1.4 shows the discussion schedule and structures of the different focus groups.

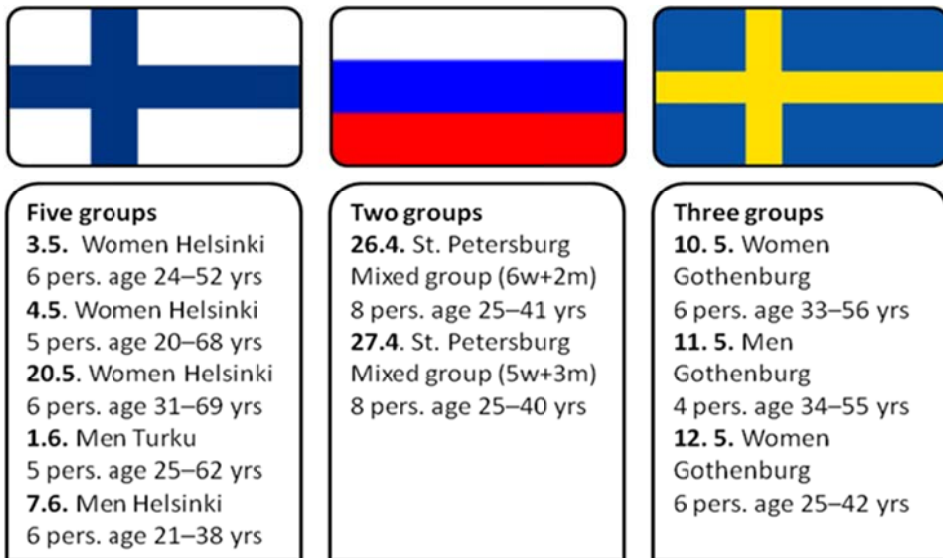


Figure 1.4. Discussion schedule and the structure of different focus groups (2010).

1.3.4 Interviews with Brand Owners and Package Designers

To further explore the “communicative and strategic aspects of package design”, special in-depth interviews were conducted with brand owners and package designers.

In December 2010 and February 2011, interviews with brand-owners and package designers in Finland and Sweden were organized to gain insights on how package design processes are carried out in practice and to discuss the challenges in the field. Altogether 13 people in six different companies were interviewed. The interviews were either personal interviews or group interviews with co-workers.

Interviewees included:

- Ia Adlercreutz, Director of Business Development and Branding, Kekkilä. Interviewed by e-mail, 28 Nov. 2010.

¹ These are not included in the data since the discussion structure was only partial in the pilot tests.

1. Messenger Package Project (2008–2011)

- Pernilla Widholm, Marketing Director, and Pia Holmberg, Product Specialist, Hasselfors Garden. Interviewed in Örebro, Sweden, 1 Feb. 2010.
- Heli Säde, Portfolio Design Manager, and Marko Halttunen, Packaging Specialist, Fiskars Brands. Interviewed together with Emilia Valtola in Billnäs, 7 Dec. 2010
- Rikhard Ahlberg, Graphical Designer, Fredrik Axelsson, Industrial Designer, and Mikaela Dyhlén, Strategic Insights Manager, BVD Design & Branding. Interviewed in Stockholm, 10 Dec. 2010
- Kati Randell, Packaging Development Manager, and Päivi Svens, Brand Manager, Fazer Confectionery. Interviewed in Vantaa, 21 Dec. 2010
- Helena Piippo, Account Manager, Petteri Järvelin, Creative Director, and Sofia Uitto, Director, SEK Design. Interviewed in Helsinki, 24 Feb. 2011.

1.3.5 Master's Theses

Three master's theses – focusing particularly on the area of “communicative and strategic aspects of package design” – were completed in collaboration with the VIP project.

First, Paula Määttä conducted her study “Package design as a marketing communications vehicle – the package designers' perspective” between spring 2009 and spring 2010 at Hanken.

Second, Lotta Immonen from the Aalto University School of Economics studied “Package cues and their influence on the perception of premium private label products” between spring 2009 and spring 2010, focusing particularly on the private label coffee packages of Stockmann.

Third, Emilia Valtola from the Turku School of Economics conducted her study during 2010–2011. The study focused on the packages of Fiskars and was titled “Dialogue between a product and a package as a source of brand association”.

1.3.6 Printing Studies, Trials and Testing

In the sub-area “technological tools in the development of package communication” the research involved studying on-demand digital package printing and the possibilities to use package customization in target group communication. Research included digital package printing case studies for on-demand package pro-

duction. In addition, the communication characteristics of packages were studied, paying attention to different packages and consumer needs. The two primary research themes were:

- digital package printing study/case studies
- package communication elements & flexible customizing.

The research into the technological aspects of package communication was based on VTT's long-term research activities in the areas of functional and digital printing, image quality analysis and intelligent packaging. Moreover, VTT's state-of-the-art digital printing facilities were utilized in the study.

The sub-area included different phases including:

- company interviews
- expert interviews
- literature studies
- printing trials
- economic evaluation of case studies
- safety evaluation
- testing and evaluation of printed samples (visual evaluation, accelerated weathering, migration).

The data, trials, testing and analyses for the sub-area were organized and analyzed by VTT.

1.3.7 IDBM Student Projects

Two IDBM student projects (2008–2009 and 2009–2010) were conducted during the project with the aim to integrate market, design and technology knowledge, to apply the knowledge in a practical package design context, to cater to the specific needs of the collaborative companies and to create new packaging design ideas for the future. The projects lasted for one academic year (September-May) and involved four students each: two design students, one business student and one technology student.

In the first project, the student group examined the possibilities and limitations of package design in visual and haptic brand and product communication, as well as in usability, and produced new creative package design concepts for Fazer, Fiskars and Kekkilä. In the second project, another group focused on product displays and created new display concepts for the same companies. Both

the initial and final results of these projects were collectively discussed and commented on in the VIP research workshops in spring 2009 and 2010.

1.3.8 Researcher Exchange

The project included two international research exchange periods in Valencia, Spain and Gothenburg, Sweden.

The research partner in Valencia was ITENE (Instituto Tecnológico del Embalaje, Transporte y Logística) where Rusko spent three months in spring 2009 as a visiting researcher. The exchange work included studying packaging communication elements, interviewing experts and participating in courses and seminars. The visiting researcher interviewed experts at ITENE, AIDO (The Technical Institute of Optics, Colour and Imaging), University of Valencia (marketing department) and Polytechnic University of Valencia (The Research Group on Graphic Technologies). The interviews dealt with package development issues and tools for integrating different fields in package development for more holistic approaches.

In autumn 2009, Heiniö spent one academic semester in Gothenburg to establish contacts with Swedish packaging and design researchers and to learn about package design practices in Sweden. Heiniö was a visiting doctoral student at the Business and Design Lab of Gothenburg University and a member of Professor Ulla Johansson's team. During the autumn in Sweden, Heiniö found research partners to conduct the Swedish part of the cross-cultural focus group study, made contacts with the Swedish packaging industry during Scanpack and Pacsem and reported various trend observations to Messenger Package partners.

1.4 Aim and Contents of the Report

Some of the results and highlights of the Messenger Package project are presented in this report. The report also includes a list of publications in the project, which will provide more detailed results from the different subjects studied in the project.

Chapter 2 of the report examines the objectives and elements of packaging communication. This chapter provides an overview of packaging communication and presents the starting points for package communication development.

Results from the consumer study part of the project are presented in Chapter 3 and the results from the package design as brand communication study are de-

scribed in Chapter 4. Chapter 5 presents digital package production and the execution possibilities of package communication based on the project results.

Based on the results in the different research topics, the key findings of the project are summarized in Chapter 6, which also includes the conclusions of the project and recommendations based on the project. The results of the project are discussed and conclusive remarks given in Chapter 7.

2. Package Design as Communication

In spring 2010, the Messenger Package steering group was asked to give their examples of good package design and state the reasons why these package designs are special. The project partners stated that the following features are important for good package design (not presented in hierarchical order):

- Functionality
- Material optimization
- Ecological consideration
- Appropriateness to usage context
- Brand/company fit
- Tells a story
- Experience, novelty
- Supports presentation in the retail environment.

The last four of these features are directly linked to the package's role as a messenger. It was agreed that the principal goal of package communication is to support the product: draw attention to the product, make the product desirable, inform about the product and build a brand relationship (whether a product brand or corporate brand). This can be done by telling a captivating story (by visual or verbal means), providing a pleasing experience that stands out from the competition or enhancing the total appearance of the product in the retail environment. Figure 2.1 illustrates how the goals of package communication can be divided into more concrete communication objectives with regard to the package as a message and the different elements of communication.

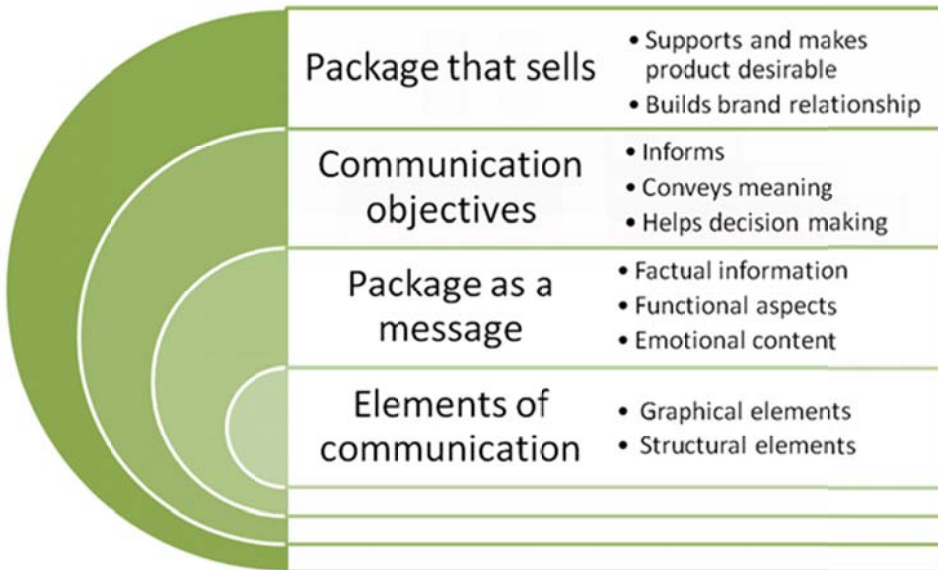


Figure 2.1. Hierarchy of package communication.

Despite the difficulty of generalizing anything, the Messenger Package project distinguished three basic objectives for package communication: (1) the package informs about the product, (2) the package conveys meaning without words and (3) the package helps decision making. When evaluating the package as a message, three dimensions of communication can be distinguished: factual information, functional aspects and emotional content. Finally, all communication comes down to graphical and structural elements, which together constitute the desired message and outcome. Objectives for package communication and elements of package communication are discussed in more detail in this chapter. The role of a package as a brand message is explored in Chapter 4.

In Messenger Package, a package's role as a medium of communication was emphasized throughout the project, without neglecting the package's role as a container. A package is both a product container and a communications medium and both functions have an influence on each other. Package communication is always dependent on the package's function as a container, which limits its possibilities to communicate [cf. 1]. Package size, material and surface space largely determine what can be communicated and how. Therefore, the objectives for package communication can widely vary between product category and industry. The brand owner–consumer relationship was given the main emphasis in the project and is reflected in all presented results. The retailer perspective was not

totally ignored, but since retailers are dependent on consumers' buying decisions and behaviour, consumer insight was considered most crucial.

2.1 Package Communication Objectives

Package communication objectives can be roughly divided in three categories. First, a package needs to provide information to its buyers and users. Second, a package has a crucial role in conveying meaning in the retail environment as well as in the context of use. Third, given the vast variety of different products, effective package communication helps decision making. A good package conveys the right message and supports the brand by being emotionally appealing, performing unique functional features as well as complying with the legal requirements for packaging.

2.1.1 Package Informs about the Product

One of the primary objectives of package communication is to inform. What to inform and how is often a question of legal guidelines in a particular product category. Some guidelines are widely accepted in the international market scene, while others can be very country-specific. In addition to product and producer information, the package often informs how the product should and could be used, at whom the product is targeted as well as how to dispose of the product and its package. Information on package disposal has become more and more critical in recent years as people have become aware of the environmental impact of packaging.

In addition to the legal guidelines, the product category and traditions in communication largely determine what information should be featured on a package and what can be left out. For example, in the Messenger Package consumer focus groups, it was found that people sought different information from the packages depending on the product in question and their own experience. For gift chocolates, information about the product and producer were the most important facts to be communicated on the package. These functioned as indicators of product quality and taste. Information needs for gardening soils and pruners were different. The producer name was of course highly important (signalling the quality of the product), but instead of product ingredients, people were looking for information on product use, especially those who did not have experience of gardening.

Informing people to the right extent and in the right way is always a challenge, especially if the same product package is to be sold in different markets. Package

information can create confusion by conveying either too much information or misleading and inaccurate information [2]. Given the small surface area of packages, it is difficult to present the same information in several different languages. Furthermore, having much text on the package is not helpful to buyers or users either. Small fonts and dense writing styles often fail to deliver the information to its recipients, as such text is difficult to read from the package [see also 2, 3].

Since it is challenging to include the necessary information on small packages, brand owners have looked for ways to communicate without words. The industry has long relied on written language on packages, but it has now become difficult to use verbal information effectively as products are no longer sold in one homogeneous market.



Figure 2.2. Fiskars P34 pruners with new package design.

Example – Case Fiskars

Fiskars renewed its garden tool packages to communicate product information in a way that is not dependent on any written language. Fiskars created its own symbolic language to communicate product features in the same manner to different people around the world. In this way, Fiskars can have a similar visual identity in all markets and does not need to worry about printing product information in 18 different languages. In fact, with symbols, Fiskars can deliver more information about the product functions, use and maintenance than would be possible with written language. Additionally, changing written product information to symbolic images enables Fiskars to use the package surface to communicate other things, such as reinforcing the brand and promoting the Fiskars gardening experience.

The challenge for Fiskars has been to transform the complex product information into simple images and symbols that can be easily interpreted by different people. Since it is hard to build a new language based on symbols, the retailer plays an important role in how gardeners and non-gardeners around the world finally interpret the new Fiskars packages.

2.1.2 Package Conveys Meaning without Words

Since many products and producers more or less resemble each other, basic information is seldom enough to convince people to buy a certain product. As the Fiskars example illustrates, a package not only can be used to communicate the necessary product information, but also has an important role in reinforcing the brand and promoting the user experience with the product. In the end, it is not only the information that matters; the emotional messages conveyed by packages are also important.

When time and exposure are limited, as it would be in a normal buying situation, emotional messages are best communicated by non-verbal means. People usually spend only a few seconds to make a purchase decision and in this short time it is impossible to communicate complex meanings with words – non-verbal means (colours, shapes, images) are much more effective. Semiotics, the study of signs and meanings, provides tools to interpret and analyze different package design elements.² Especially Peirce's³ notion of a sign's object-referent relationship can very useful for understanding how package design can function as a meaning carrier. A package design element (or the whole package design) can convey meaning by having iconic, indexical and symbolic references to the product and product use.

² More about package design elements in the next chapter.

³ American pragmatist philosopher Charles Sanders Peirce (1839–1914) wrote his theory on signs in the 1800s. The writings were collected after his death and published in the 1950s as collections. The original source for a sign's object-referent relationship can be found in Peirce 1958/2:228.



Figure 2.3. Fazer Geisha chocolate.

Example – Case Geisha gift chocolate box from Fazer

The heart-shaped Geisha gift chocolate box (225g) is rich in embedded meanings and is presented as an example of iconic, indexical and symbolic package design.

Iconic reference means that a package design element refers to its object (product) through some form of replication, simulation or resemblance [4, 5, 6].

The picture of chocolates (wrapped and without wrapping) is an

iconic reference to the product, showing what the product inside the box looks like. The picture of the hazelnut in turn is an indexical reference. A design element that is represented through some form of indication is an index. An *index* is an element that has a real and dynamic connection with its object, but is not similar to its object, unlike an iconic sign [4, 5, 6]. In this context, the picture of a hazelnut indicates that the product contains hazelnuts. If it were an iconic sign, it would mean that there are hazelnuts in the gift box. Finally, the Geisha box conveys meaning through different symbolic package design elements. An object that has been represented conventionally is a symbol. A *symbol* refers through an association of general ideas, but does not, in itself, identify the things [4, 5, 6]. The pink colour or the heart shape of the gift box do not refer to the product as such, but instead give the product a symbolic meaning. In the Messenger Package focus group discussions, the colour pink was seen as feminine and the heart shape was associated with romance and love. Neither of these package design elements (colour or shape) refers explicitly to the physical product, but rather builds brand image through symbolic associations [see also 7, 8].

Although some common and quite universal symbolic attributes can be found, the meanings of symbols are often influenced by the cultural and social context, and can be learned only through use and experience. Symbols are therefore arbitrary, agreed-upon signs that are based on established habits and norms. It must also be noted that meanings often overlap, that is, the same representation (here the package design element) can function as an index, an icon and a symbol. For example, a picture of a flower on a product package can indicate that there is a flower inside the package (iconic reference), or there is something related to a flower inside the package (indexical reference) or that the product inside is feminine and pretty (symbolic reference). It is important for a brand owner and designer to ensure that buyers and users interpret the message as intended [7, 8].

2.1.3 Package Helps Decision Making

The variety of products in retail environments complicates consumer choices. Convenience plays an important role in consumer decision making today, especially in the case of daily products. The busy lifestyles of people around the world and the abundance of different alternatives have contributed to the trend that easy and simple package designs tend to work best. People do not have the time and interest to carefully study all the different packages when doing their daily shopping. Analytical pondering of different package design elements is mainly the realm of researchers and package designers. Most people just like to take the first package that represents a brand they feel comfortable with, suits their current need and maybe even promotes their lifestyle (and values).

This is why simple and clear messages often function better on packaging than expressions that require time to be understood. This is not to say that packages need to be dull, but rather that their key message should be understood without conscious mental processing. This is also why non-verbal messages (colours, shapes, pictures) are stronger in package design as they require less time to be understood and interpreted: *“A picture is worth a thousand words”*.

In the Messenger Package focus group discussions, it was found that people mostly oriented themselves according to the brand, and especially the corporate brand. When the brand owner was familiar to them and they had good previous experiences with it, they often chose a product from a known producer even if the product itself was not familiar to them (see also Chapter 4).

Example: Corporate brand recognition helps decision making

For example, in gift chocolate discussions it was common to hear the following: “I haven't tried this chocolate before, but the box looks interesting and since it is made by Fazer, I know it is good chocolate.” Or in pruner discussions, the discussants would justify their choice like this: “I don't have any pruners or experience of cutting branches, but Fiskars is a good old company that makes reliable products.” Corporate brands seem to be at the very core of package communication, and communicating the corporate brand clearly will help decision making for many.

2.2 Elements of Package Design

Package design is generally understood as the visual appearance of a product package having two basic components: graphics and structure [9]. Graphics refers to the visual package design elements such as colours, images and typography. Structure refers to the three-dimensional and tactual design elements like shape and material (Figure 2.4). In package design research, graphics has been given more attention than structural design elements. Two explanations can be found for this. Firstly, visual package design features, especially colours, have been shown to have a strong influence on people's buying behaviour. Secondly, package design is in most cases the task of a graphical designer rather than an industrial designer. Our experience has shown that package design is often approached as a graphical finish to an existing package solution and designers do not have much influence on the form and material of packaging.

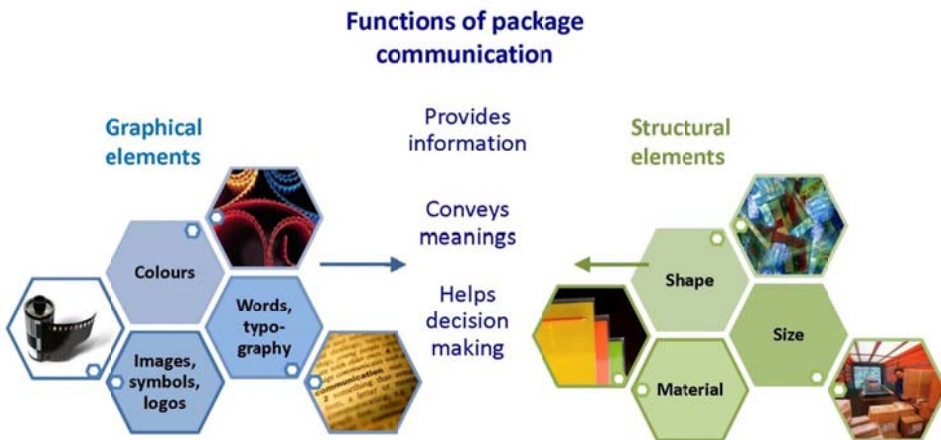


Figure 2.4. Package design elements contributing to package communication.

Elements creating package communication can also be categorized to non-verbal and verbal signs on packages. Non-verbal signs are those elements of the package that evoke aesthetic responses and convey meaning without written language. For example, colours and pictures are non-verbal signs whereas brand name and product information are verbal signs. It is commonly acknowledged that non-verbal signs are stronger and more reliable than verbal signs in interpersonal communication and tend to be so in other forms of communication too.

This chapter gives an introduction to the existing research on different package design elements. The studies and observations made during the Messenger Package project are also discussed.

2.2.1 Graphical Elements

Several studies can be found on graphical package design elements and how these influence people's buying behaviour. The most recognized package design element is colour. It is said to be the most powerful design element, as it enables quick recognition and easy association patterns in a retail environment [2, 10, 11, 12, 13, 14].

Colour

Colours help buyers to categorize products and recognize brands, especially among daily products⁴. Usually it is not necessary to read product information when buying milk or butter since product differences are easy to recognize by the package colour. Since there are no universal colour codes, colours can also be misleading and brand owners often set their own colour codes to indicate differences between tastes and other product qualities (for example coffees and garden soils). Three roles for colours on packages can be identified: (1) colours attract attention, (2) colours evoke an aesthetic response and (3) colours convey meanings concerning the product and product class [11].

1. Colours attract attention

One of the prime functions of colours is to attract attention. Considered solely from the perspective of human physiology, warm package colours (like yellow) would be best since they get our attention most easily. However, warm colours do not count for brand preferences and buying behaviour in the long term. In the Messenger Package focus group discussions, it was found that colours make a brand recognizable and thereby attract attention. When the discussants were asked to evaluate two pruner brands (Fiskars and Gardena), many of the discussants made their

⁴ Daily products are an example of low-involvement products. A product is considered low involving when the decision-making process is short and the product purchase is not very relevant (for that person).

decision according to the colour of the pruners – they recognized the colour and thought that it was good. In this product category, colour was more commonly recognized than the brand name.

2. Colours evoke an aesthetic response

During the past decade, aesthetic product attributes and product design have been given much attention in all product classes. Since the basic functional quality of products is taken for granted, people look for other value aspects from products. In the Messenger Package focus group discussions (2009 and 2010) on gift chocolates, for some of the discussants the pink colour of Geisha chocolates was the main motive to choose the product (pink considered feminine and pretty), while for others the pink colour was the reason why they did not choose the product (pink was considered too girlish, resembling sanitary products).

3. Colours convey meanings concerning the product and product class

Package preferences are influenced by the meanings conveyed through colours. In the focus group discussions on gift chocolates, it became evident that dark colours were considered masculine and light colours feminine. People have also learned association patterns. Whereas Finns see blue as a proper colour for chocolates (association with Fazer chocolates), Russians and Swedes prefer lighter colours.

Trends in the choice of packaging colour are also evident. For example, recently it has become common to use black as a sign of premium quality and differentiation in packaging. This trend was also reported by Ampueiro & Vila [12], who found that products in cold, dark-coloured packaging were associated with products that are high priced, elegant or aimed at the upper classes. But black is rarely a permanent choice for consumer packaging and the dark trend seems to have turned very fast and headed in the opposite direction: white is “the new black” and many exclusive products can now be found in fine white packaging. Immonen’s [15] study on coffee packages also supports the white trend as glossy white functioned as a sign of premium quality coffee for the focus group discussants.

Images, Symbols, Logos

To be noticed in the retail environment, pictures and other visual imagery on the package are also very important. Underwood et al. [16] suggest that consumers

2. Package Design as Communication

are more likely to spontaneously imagine aspects of how a product looks, tastes, feels, smells or sounds while viewing product pictures on the package. Pictures are extremely vivid stimuli compared to words and also are quicker and easier for consumers to process in a low-involvement situation [16]. Gardening soil packages are a good example of conveying meaning and evoking aesthetic responses (cf. colours) with visual imagery. As a product, soil is not very meaningful and aesthetic as such; therefore, to transform the good qualities of soil into something concrete, the soil packages often have pictures of flowers and plants. These images promote the experience of pleasant planting activity instead of communicating the product or product ingredients.

Words and Typography

The choice of words and typography is an essential part of creating package communication. Typography encompasses several different variables, e.g. the font type and amount of font types, font size, colour contrasts, empty space around the text, location of the text, etc. Even a simple change of the font type of the package text can change the packaging communication substantially and affect product positioning [3, 17, 18].

Words and text on packaging create the written messages on packages. The content of the text, languages used and ease of comprehension are part of package communication and affect how the written messages are interpreted. As an information provider, packaging is very practical, as it brings the information so close to the real end-user. However, the information will not reach the user if the text is impossible to read or understand. The readability of the text is a remarkable factor possibly causing everyday challenges to the end users, especially among elderly people. Therefore, it is very important to pay attention to typographic variables in package design.

2.2.2 Structural Elements

The structural package design elements are the material, size and shape of the packaging.

Material

There are several packaging materials available. The most common materials are paper and board, plastic, metal and glass. Each of these materials has various

subcategories and its own image among consumers that contributes to the perceptions of product image and quality.

The Messenger Package project found that the environmental image of paper and paperboard is superior to other packaging materials. These materials are also considered safe and inexpensive, yet everyday packaging materials. The image of glass is determined by aesthetics, high quality, high cost and hygiene. Plastic, aluminium and tin are perceived as the most environmentally harmful materials. In addition, plastic is considered to be an everyday, inexpensive, hygienic and safe material. Aluminium is perceived as an aesthetic and high quality material. Tin is thought to be the most old-fashioned of all packaging materials.

Many consumers value the transparency of packaging materials, i.e. they want to be able to check the quality of the product they are buying. However, in some cases the product might not be appealing enough to sell itself. This is mostly the case with industry-packaged ready-prepared meals, which are usually not as appealing as the corresponding restaurant portions. Some producers have resolved this problem by covering the transparent product package with a cardboard sleeve that can be slid to the side. This enables the customers to check the product quality and its contents, and the sales package still looks attractive, featuring a printed picture of the corresponding restaurant portion. In salads, this problem can be solved by placing an additional tray into the package to separate the ingredients and make the product stay more appealing.

Shape

Package shape is also regarded as one of the most important factors in package communication. Yet, in most cases, the shape of the package is determined by the material and packaging technology used. From the logistics viewpoint, all packages should be rectangular in order to minimize the amount of transported “air” and maximize the efficient use of shelf space. Retailers’ modern space allocation systems often determine the maximum and minimum sizes of packages belonging into a specific product category. Unwieldy and unstackable packages are most likely to be rejected from the assortment. Thus, a package designer should be aware of the requirements of the wholesalers and retailers and take these into consideration while exploring new package options. Moreover, the industry, in turn, claims that consumers prefer conventional packages, i.e. they want to buy their food in “traditional” kinds of packages [19]. The major reason for this could be that the food industry has provided consumers with quite a nar-

2. Package Design as Communication

row spectrum of packages for a number of decades. This is because of the expensive machinery that requires high long-term investments and cannot be adjusted easily to a new type of packaging.

However, there are encouraging examples of innovatively shaped packages that have retained their value in consumers' eyes for a number of decades. For example, the Coca Cola bottle and Toblerone package have had a strong contribution to their brand image. In the Messenger Package project, it was found that rectangular, sharp-edged chocolate boxes were regarded as masculine, whereas round forms were seen as feminine (see Chapter 3.3).

Size

Trends such as the decrease in family size and increase in grazing (i.e. eating snacks during the day) have led to greater demand for small packages. The various use situations for the products are usually indicated by altered package sizes. Package size also contributes greatly to package convenience. In the Messenger Package studies, it was found that Russians, for example, prefer small chocolate packages that fit into a purse.

The size of the packaging communicates the amount of product inside. If the packaging is too big, consumers can feel they are being misled about the amount of product inside.

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3. Package Value for the Consumer

Packaging can provide a great source of value for consumers and pose a major challenge in creating value for them. The relationship between consumers and packages could be characterized as being twofold. Consumers enjoy the benefits of packaging, such as product hygiene, convenience and extended shelf-life, but dislike the packaging costs, such as the waste produced and the inconvenience of recycling [1, 2].

In this study, package value for a consumer is defined as (adapted from Woodall [3]):

A consumer's personal perception of the advantage/disadvantage arising out of the benefits (perceived as attributes or consequences) and costs (monetary or behavioural) related to purchasing, using and disposing of a product in a package, in comparison to other package offerings.

As this definition of value indicates, package value is something perceived by the consumer, rather than the product manufacturers or marketers. Thus, value cannot be objectively determined, but involves a subjective evaluation that depends on the consumers' **personal factors** such as demographic background, attitudes and experiences (Figure 3.1). The package attributes and their consequences (determined by **package factors**) might be perceived differently depending on the **consumption factors**, e.g. packaged product and the context of evaluation. When measuring package value, it is also important to note that value is always perceived in relation to the competing packages on the store shelves, regarded as the **market factors**.

According to Smith & Colgate [4], the following types of value could be created through packaging (examples in parenthesis):

1. Functional/Instrumental value

Concerned with the package attributes (material), performances (recyclability) and outcomes (environmental benefits).

2. Experimental/Hedonic value

Packages' ability to create experiences, feelings and emotions. The types are sensory (feel/tone/scent), emotional (happiness/love) and epistemic (novelty) value.

3. Symbolic/Expressive

Psychological meanings of packages related to self-identity/worth (possession), personal meanings (childhood memories), self-expression (personality), social meaning (luxury) and conditional meaning (symbolism).

4. Cost/sacrifice

Packages' ability to minimize economic (low price), psychological (reduced stress), personal investment (time/effort) and risk (food illness) costs.

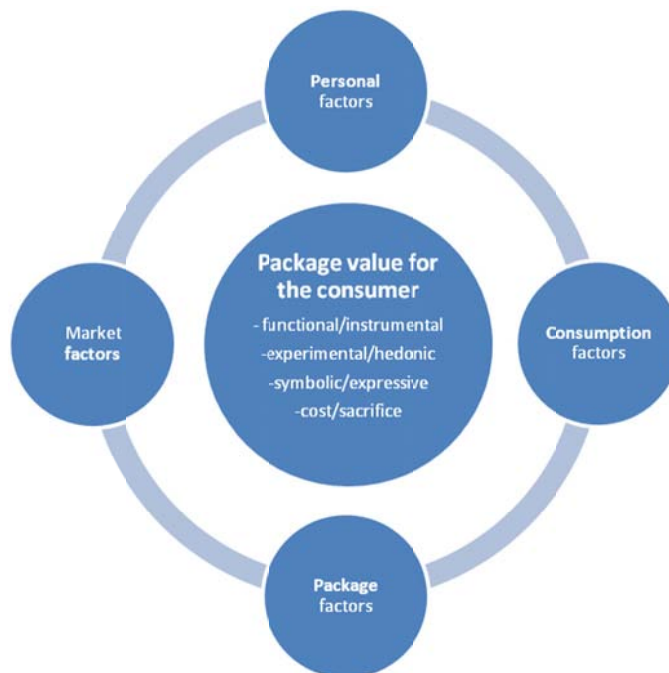


Figure 3.1. Factors influencing consumers' package value perceptions (adapted from Woodall [3] and Smith & Colgate [4]).

3. Package Value for the Consumer

In order to create value through packaging, designers have to be aware of all these contributing factors. The Messenger Package project studied the general trends in consumer attitudes and preferences, as well as the influence of the product and the situational factors on the perceived value. The different package value types were also researched. Some of the main results will be presented in the next sections of this chapter. More specific results can be found in the project publications [5, 6].

3.1 General Trends in Packaging Preferences and Attitudes

According to the Messenger Package survey in 2009, the current consumer attitudes towards food packaging are more positive than a decade ago. Men showed more positive attitudes towards packaging than women. Consumer perceptions of the quality of industrially packaged products had also become more positive. Young respondents in particular valued the increased hygiene and shelf-life provided by packaging. Packaging aesthetics was also measured to have more relevance to consumers than before. More consumers agreed that colourful and impressive packages persuade them to try out new products.

Increased trust in food safety

Consumer trust in food safety and the chill chain had also increased. Of the respondents, 66% trusted the stores to ensure that the food products have been stored in the proper temperature. Consumers hold positive attitudes towards time-temperature indicators (TTIs) in the packaging of perishable foods, such as packed fresh meat and fish (Figure 3.2). The improved confidence in the chill chain, however, had caused a slight decrease in consumer perceptions of the necessity of the indicators.

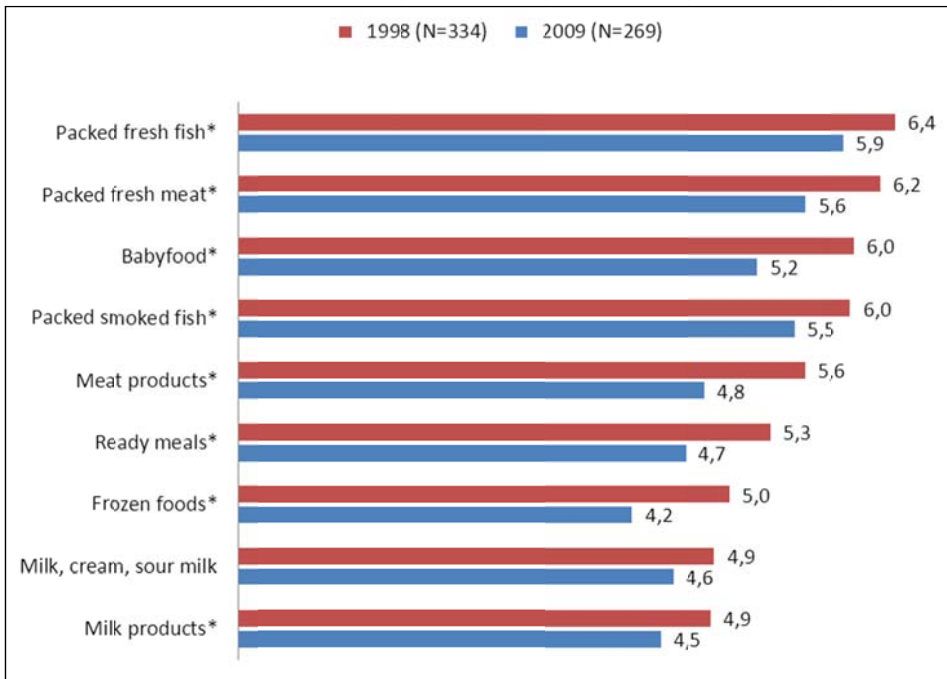


Figure 3.2. Perceived importance of TTIs in foodstuffs (1 = totally unnecessary; 7 = extremely necessary). *P = 0.05 (t-test).

Recycling increased, reuse decreased

Consumers' recycling attitudes showed no significant changes during the studied time period, although packaging materials were recycled more regularly than ten years ago. This is due to improved recycling opportunities. In particular, women and respondents over 50 years of age perceived the recycling of packaging materials as important and essential for the environment. Reuse of empty packaging in households for food preservation purposes, especially of glass bottles and jars, had diminished over the last decade (Figure 3.3).

3. Package Value for the Consumer

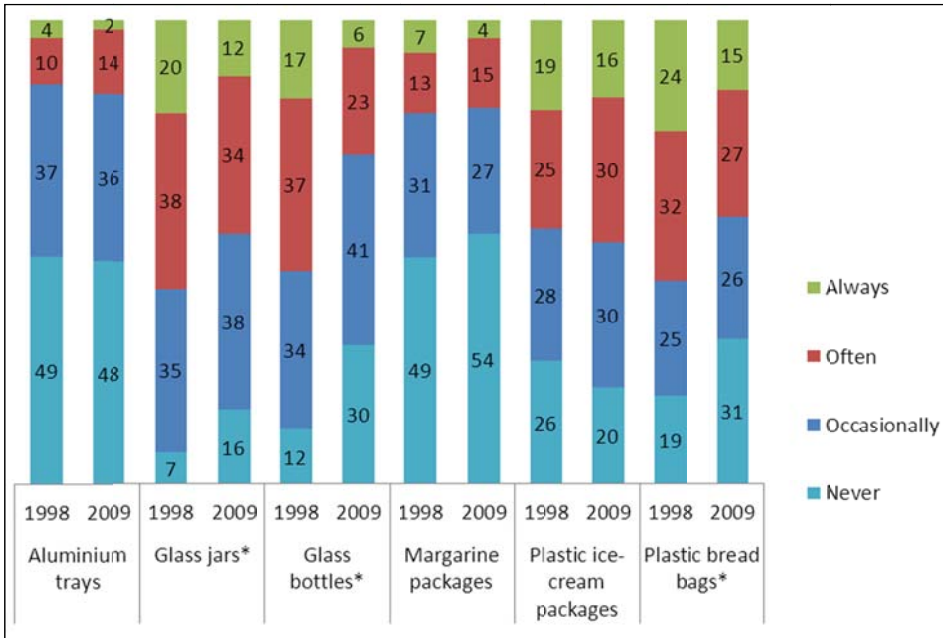


Figure 3.3. Reuse of empty packages in 1998 (N = 363) and 2009 (N = 256). *P = 0.05 (t-test).

Functional benefits outweigh environmental benefits

Consumers valued most the following characteristics in packaging: product information, easy-to-open, overall convenience and environmental friendliness (Figure 3.3). The perceived importance of package information and economical price lost significance over the time period. The slight decline in the importance of package information could be explained by the Internet, which has decreased packages' role as the sole source of product information.

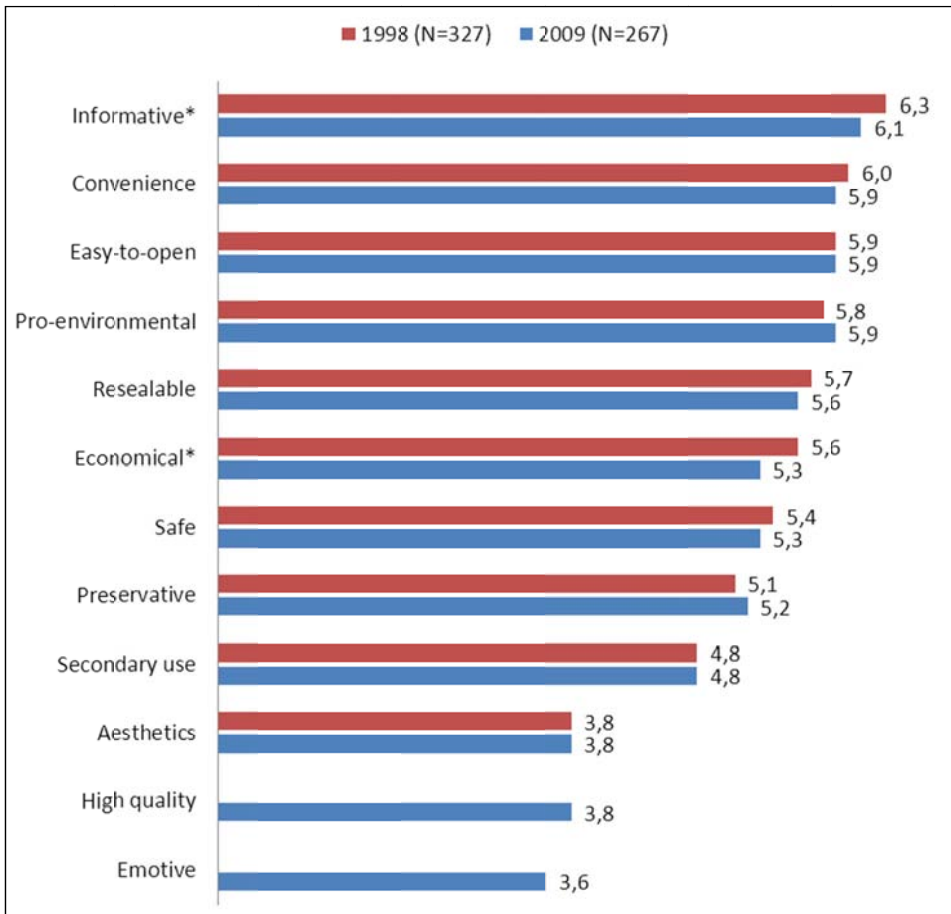


Figure 3.4. Consumer preferences for packaging attributes in 1998 and 2009 (1 = unimportant; 7 = extremely important), *P = 0.05 (t-test).

Women appreciated environmentally friendly packaging more than men did. Consumers over 50 years of age in particular valued packages that are not only environmentally friendly, but also easy to open and reclose. Consumers commented on packaging being difficult to open and reclose. Eco-friendly packaging and over-packaging (multiple layers of packaging or packaging material) were also strongly addressed in consumer feedback. In 2009, the appropriate size of packaging was also highlighted. Large packages were no longer seen as ecological; rather, consumers felt that the size of the package should correspond better to the intended use of the product.

3.2 Consumer Value Orientations

In the Messenger Package survey, five distinctive consumer segments were identified according to their value orientation for food packaging (Table 3.1). The segments were developed among the adult respondents in the research data. The 'Eco & Design' segment, comprising those who experience value from both packaging sustainability and aesthetics, expanded from 21% to 33% over the studied time period. Thus, more consumers valued packages that are ecological, yet prestigious in design. On the contrary, the sizes of the 'Quality & Design' and 'Cost-oriented' segments diminished from 17% to 13% and from 28% to 19%, respectively. The 'Environmentalist' (27%) and 'Egoist' (8%) segments did not see major changes.

Table 3.1. Consumer segments according to package value orientation in 1998 and 2009.

Segment	Profile	1998 (N = 316)	2009 (N = 261)
Environmentalists	Recycle all packaging and are willing to pay a premium for pro-environmental packaging. Prefer as little packaging as possible.	27%	26%
Eco & Design	Recycle regularly. Prefer packages that are ecological, yet prestigious in design.	21%	33%
Cost-oriented	Moderate recyclers and prefer cost-effective packaging.	28%	19%
Quality & Design	Don't recycle much. Value packages that are aesthetic and of premium quality.	17%	13%
Egoists	Don't recycle much. Prefer packages that are convenient to use.	8%	8%

The respondents' sociodemographic background was found to separate the segments. Gender was identified as a discriminating factor, as male respondents were over-represented in the Egoist group (35% vs. 18% in the sample). The Environmentalist segment held a higher education level than the other respond-

ents (38% vs. 32% in the sample). The self-reported recycling frequencies of packaging materials varied extensively across the segments. The most frequent recyclers were found in the Environmentalist and Eco & Design segments, whereas the Quality & Design and Egoist segments showed the least interest in package recycling.

3.3 Package Value Dimensions

The Messenger Package project studied how packaging communication elements contribute to the different types of value experienced from packaging (see p.35). Next, a chocolate box case is presented for studying the influence of package shape on the value perceptions. In 2010 the focus group participants in Finland, Sweden and Russia were presented with packages for chocolate bonbons. Within the sample boxes, the packaging materials (carton) and graphics were indifferent. Only the shape of the box was varied (Table 3.2).

Chocolate box A represented a gable top package with a window, an atypical shape for a chocolate package. Consumers experienced functional value both from the practical size and the window. The transparency of the package made product identification easier, as the package shape was perceived as unfamiliar. The shape of the package also created emotional value, as many of the respondents perceived it to be luxurious, cute and cozy, although some perceived it to be plain. Because of the luxury elements, the respondents felt that the package would be a good gift, suitable for showing appreciation and for surprising a friend or spouse. The package was also perceived to provide good value for money.

Package B was perceived to provide convenience because of its flat, regular shape. It was easy to fit into luggage, etc. The flavour assortment was also perceived to add value. The package was described as luxurious, but also standard and simple. Consumers especially liked the fact that the customary plastic wrapping had been replaced with a ribbon, so they could feel the carton. The package was also perceived to provide good value for money.

Emotional and symbolic value elements were strongly attached to chocolate box C. The round box was perceived as attractive, original and harmonic. The package also created strong associations, such as a hatbox or a cake box. The package shape was perceived to symbolize love and romance. It was also seen as feminine and the respondents commented that it looked expensive.

3. Package Value for the Consumer

The cubic package with a display opening (D) was strongly associated with convenience. The package was described as compact, easy to open and reclose, and appropriate for serving. Respondents also stated that the package could be described with attributes such as interesting, original, cozy and happy. This sample also came up with strong associations, such as ‘a mysterious chest’, ‘firewood box’ and ‘warehouse feeling’. The package was perceived to be masculine.

Table 3.2. Chocolate box attributes and the related value dimensions.

Package shape	Functional/ instrumental	Experimental/ hedonic	Symbolic/ Expressive	Cost/ sacrifice
A. Gable top with window	Practical Transparency	Luxurious Plain Cute Cozy	Luxurious Gift For showing appreciation For surprising	Value for money
B. Flat box & ribbon (assortment)	Convenience Assortment	Luxurious Standard Simple Touch of carton	Luxurious Classical	Value for money
C. Round box		Attractive Original Appetizing Aesthetic Harmonic	Strong associations Love and romance Feminine Gift	High price Expensive
D. Cubic box, display opening	Convenience	Interesting Original Cozy Happy	Strong associations Masculine	

3.4 Cultural Differences – Finland, Russia and Sweden

During the Messenger Package focus group studies in 2010, various cultural similarities, but also differences, were observed among the Finnish, Russian and

Swedish consumers. Some of the most significant differences between the package value perceptions were (Table 3.3):

- Russians experienced most value from package customization, i.e. printing of seasonal greetings on packages. Finns and Swedes were a bit more sceptical about the benefits and provided comments such as “mass production” and “smells like a marketing campaign”.
- Finns and Swedes were highly concerned about the environmental impact of packaging and recycling of package materials, while the topic was never taken up in the Russian discussions.
- While Finns and Swedes preferred modest packages (“*ei liian ökyilevä*”, “*lagom*”), Russians were more willing to make a conscious statement by giving a particular gift chocolate.
- Russians experienced high value from novel packages, such as new opening mechanisms (Figure 3.5) and atypical shapes, while Finns and Swedes had strong doubts about them.
- In Russia masculinity and femininity are more emphasized in packaging design than in Finland or Sweden. In Russia there are more packages especially designed for women and men.

Table 3.3. Packaging preferences in Finland, Russia and Sweden.

	Finland	Russia	Sweden
Functional/instrumental value			
Package customization	yes/no	yes	yes/no
High environmental concern	yes	no	yes
Expressive/hedonic value			
Preference for modest packaging	yes	no	yes
Preference for novelty	no	yes	no
Symbolic/expressive value			
Masculinity and femininity emphasized in package design	no	yes	no

3. Package Value for the Consumer

Russians travel often to Finland and are thus familiar with Finnish brands and package designs. They feel that Finnish products are of a high quality. Thus, the package designs of imported products should not be modified for Russian markets. In many cases, an altered package could be regarded as a cheaper version of the product.



Figure 3.5. Packaging samples from focus group studies. Russians expressed a preference for opening mechanism B.

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4. Strategic Package Design

Some 50 years ago Pilditch [1] wrote about the supermarkets' silent salesmen and illustrated the marketing potential of consumer product packaging. Pilditch argued that a package is the connecting link between company and consumer, and that a consumer's purchase decision is dependent on the package. Even today, a package's role as a sales clincher cannot be underestimated: "*Our understanding of a good package is a package that sells,*" concluded one brand manager in our interviews.

The recent developments in consumer society have led to growing interest in packaging as a branding factor [2, 3, 4, 5]. Product packaging as a visual sign of brand features and product quality is a topical issue for both brand managers and product designers. Packaging has become an important marketing communications medium as the more traditional ways of marketing (such as mass-media advertising) have lost their grip on consumers and no longer provide the desired results.

For many years marketers have highlighted the role of product differentiation, which in many cases is made through package design. Differentiation continues to be very important in the consumer product industry, but the ways of seeking differentiation from competitors change from time to time. While it was common some time ago to attract consumer interest with flashy colours and odd shapes, differentiation now takes other forms, such as promoting environmental friendliness, using simple design or providing added value with functional package design elements. According to a recent study made by Futurelab [8], people now want brands to be friendly, personal, local and uncomplicated. Only a few years ago people liked brands that were cool, exclusive, trendy and global.

4.1 Package Design and Branding

A package speaks for the brand at the very crucial moment when shoppers are looking over the different product options in the retail environment. In addition to the package's role as an attention catcher at a point of purchase, the package also needs to provide extra value for people interacting with it after the purchase situation. Therefore, package design is not just about gaining attention, but also plays an important part in strengthening the brand message and providing shoppers and product users with extra value through informational, emotional and functional package qualities (Figure 4.1).

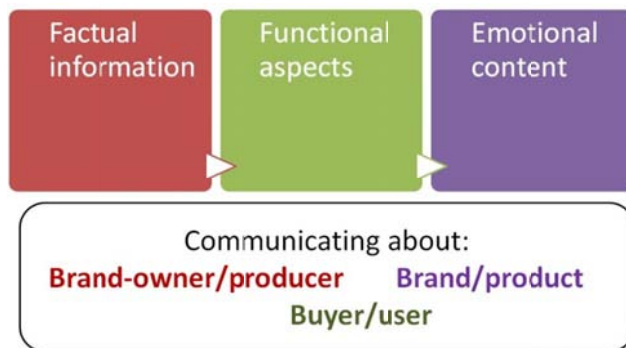


Figure 4.1. Package as a message.

Although the basic argument on the package's role as a silent salesman has remained the same, the conditions under which the package should sell the brand and the ways of persuading have changed over time. In the past, a package was mainly seen as a functional entity to carry a product and the package surface was devoted to product information. The package's functional and informational roles are still crucial, but they are now seen as tools to showcase the brand message. In other words, the brand is the umbrella for all package qualities and communication.

With regard to packaging as a communications medium, brand dominance has also fundamentally changed the approach to communicating. While informational and functional package features appeal to people's left-brain thinking and rational reasoning, brand communication almost entirely involves emotional persuasion focusing on people's right-brain thinking. This is why package design is now more and more about conveying the right emotion and linking that emotion with a particular brand.

4.2 Product, Brand and Package

In the first Messenger Package focus group discussions (2009), the main purpose was to understand the relationship between product, brand and package. Three cases were studied: gardening soils (Kekkilä), gift chocolates (Fazer) and pruners (Fiskars). In the first phase of the discussion, the participants were asked about their opinion on the products as such, without brand name or package. This meant that the topics of the first discussion were plain soil, chocolates and pruners. Discussants were able to use all their senses (sight, touch, smell, taste, sound) to describe what the product felt like and what kinds of associations they experienced with the product⁵. In the second phase of the study, participants were presented with the same products as packaged and branded entities. The examples included products from Kekkilä, Fazer and Fiskars (Messenger Package partners) and their competitors.



Figure 4.2. Plain products on the left and examples of packaged products (Fazer Geisha chocolate, Kekkilä garden soil and Fiskars pruners) on the right.

⁵ For pruners, discussants were given tree branches to cut.

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During the second part of the discussion, the presented products gained new meanings simply because of their package and brand name. While discussants were able to describe the product features in great detail during the first phase, in the second phase the product details were no longer the key interest (except for pruners). When the discussants were given the products as packaged and branded entities, they oriented themselves according to the total expression of the packaging, and specifically, the brand image.

The two main findings from the study were:

1. Package communication and the desired information/emotion/function are largely dependent on the product category. Good package and brand communication for one product does not necessarily mean good communication in every product category and for all brands. → A “one size fits all” approach cannot be found for package communication since every package is dependent on the product it carries and the brand it represents.
2. Package communication does not need to be about the product. Product features can play a minor role in the actual package communication. In the case of gift chocolates and gardening soils, people did not really recall their feelings and emotions concerning the actual product (the sensory experience of chocolate or soil) when evaluating packaged and branded products. → The packaged brand image can be based on attributes other than the product features, and the package can serve as, for example, a channel to promote an experience with the brand (instead of the product as such).

With three very different products and packages (garden soil, gift chocolate and pruners), it was possible to illustrate two key differences that are dependent on the product category (cf. Figure 4.2). First, norms and traditions in a particular product category largely determine the communication hierarchy on packages. Functional information was considered important for gardening products, while emotional associations directed choices in the gift chocolate category. However, as can be seen from the Kekkilä soil package, even products that have traditionally been considered mainly functional are moving towards more emotional and aesthetic brand expressions. Second, there was a remarkable difference in the overall package appearance of the three products. For pruners, the whole product is visible and touchable even in the package. Some gift chocolate packages have a window enabling people to see what the product looks like. Gardening soils

are packed in plastic bags and the product itself cannot be seen. The amount of visibility of the actual product largely determines the product-package relationship. When the product itself can be seen (or even touched), the package can be employed to communicate other things. Valtola's [9] Master's thesis unravels the product-package relationship even further with a study on case Fiskars.

4.3 Package as a Brand Expression

It can be said that the package is the brand's dress. The package needs to highlight the best attributes of the product and its producer. The first impression is important and impressions are made without words. When the package looks good, trendy and expensive, the same features are easily associated with the brand. Similarly, when a package looks firm and consistent, the brand is seen as trustworthy and reliable. We dress differently to give the right impression in the right place – so should the brands do with their packaging.

Since many products have now become more generic, it is difficult to compete with functional product features, especially in product categories such as garden soils and gift chocolates. As was pointed out in the previous chapter, most of the focus group discussants did not consider the product features crucial for their choice of garden soils and gift chocolates, but they oriented themselves according to the brand and package. For these products, the package's primary role is to communicate the brand (whether a corporate brand or a product brand).

Design agencies usually begin a package design process with a brand evaluation. It is common for brand owners to contact a design agency to renew a package design, but then end up re-evaluating the brand and clarifying the brand message with the agency. The brand message needs to be clear in order for the package design to make sense, as every design feature should support the desired brand image [10, 11]. A pretty package cannot save a bad brand and too many good brands fail to deliver a clear message with their packaging. It is also important to keep the package design honest. Packaging can persuade, but it should not lie about the product or producer. Sometimes it is even desirable to have an ugly package: *“I think here an ugly package can be good – that makes it believable and trustworthy”* (comment on garden pruners⁶). Misinterpretations of the message of a package can end up being costly or even be damaging to the brand.

⁶ Focus group discussions 2010.

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Brand owners tend to give information about their brand as a written brief, although for package design it would be important to understand what the brand means as a visual representation. When a set of three written brand attributes of a chocolate brand were presented to a group of students⁷ and they were asked to give associations for each word, a wide variety of possible brand interpretations was received [12]. The exercise showed that verbal information is often not enough to describe the brand essence.

Since a word can be understood in several different ways, comprehending a brand as a set of visual images is much more accurate. This is why design agencies often work very closely with brand owners in the beginning of a package design process and organize creative workshops. It is necessary to get the wanted brand image right and ensure that the package design clearly communicates what it should [10, 11]. Määttä [13] has further explored packaging as a marketing communications vehicle from package designers' perspective.

4.4 Building the Brand with Packaging

When a package is made to please everyone, it usually fails to appeal to anyone. Creating a unique package design is not only important for differentiation in the retail environment, but also provides a means to build the brand in the desired direction. In the Messenger package focus group discussions for gift chocolates (both 2009 and 2010), special emphasis was placed on the context of use and brand fit for particular purposes. The discussants were asked to choose the best alternatives from 10–16⁸ different gift chocolate packages (representing different brands) for the following situations:

- a) Which one of the chocolate boxes would you give to a **friend at work**?
- b) Which one of the chocolate boxes would you give to a **friend abroad**?
- c) Which one of the chocolate boxes would you give to your **spouse**?
- d) Which one of the chocolate boxes would you like for **yourself**?

When the discussants chose chocolates for these different situations, their choices no longer reflected their personal likings for chocolate. Instead, their gift choco-

⁷ Chalmers Technical University, Visual Brand Recognition course September 2009.

⁸ 10 different gift chocolate brands in 2010 and 16 different gift chocolate brands in 2009.

late preferences were largely influenced by the brand expressions and interpretations of what a certain package communicates in a given context. The Figure 4.3 illustrates the discussants' gift chocolate choices for a friend (or friends) at work and for their spouse.



Figure 4.3. Gift chocolate choices for colleagues (left) and for a spouse (right).

For friends at work, the best gift chocolate packages were ones that are big enough to serve everyone and are not too personal. For example, in Russia, discussants chose Korkunov as the best chocolate to serve their colleagues, but never chose it for their spouse or for themselves. On the contrary, choosing a gift chocolate for one's spouse was a very personal choice and the best packages communicated a romantic feeling, thought or memory. Hearts as a symbol of love and romance appealed to many of the discussants. All of them chose the Geisha heart most often as the best chocolate box to give to a spouse.

As the examples illustrate, a package can help a brand to position itself. Packages can be positioned according to the usage situation or target customers. It is important to understand for what reasons the product is used and in what ways the brand can build a special presence in a particular context. The heart-shaped

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box clarified Geisha's brand message and gave it a strong position in the highly competitive gift chocolate market.

The other two brands examined in Messenger Package, Kekkilä gardening soil and Fiskars pruners, have also strengthened their position with packaging. Kekkilä's soil products stand out from the market selection as their packages have the most distinctive aesthetic visual appearance. Kekkilä also provides the smallest package size for gardening soils, which makes its products an appealing choice for people living in cities. Because of their packaging, Kekkilä's products are associated with more sophisticated gardening and considered to be part of a trendy lifestyle, which is very different from the traditional view of gardening and associations with agriculture. Similarly, Fiskars has a position as a high-end producer of gardening tools with well-designed products. Its package successfully communicates this position: the dominant black colour of the package reinforces the image of professionalism and the symbols of the functional product features support the impression of high quality and expertise. In many occasions, discussants referred to a "Fiskars person", someone who is an expert gardener and has a wall with different Fiskars tools for specific gardening purposes (and to make neighbours jealous).

4.5 International Brands and Package Design Challenge

The second round of Messenger Package focus group discussions (summer 2010) was conducted in three countries, Finland, Sweden and Russia, in order to find out how people respond to the same package designs in different markets. Gift chocolates were chosen as the main case, as Fazer chocolates are well known and available for purchase in all three markets, which made it possible to conduct a comparative study. The primary interest was to find cultural differences between consumer perceptions on gift chocolate packaging.

National preferences and cultural influences were most evident when discussants were asked which chocolate they would give to a friend abroad. Discussants chose a chocolate that was familiar (or at least had a familiar producer) and represented their country (Figure 4.4).

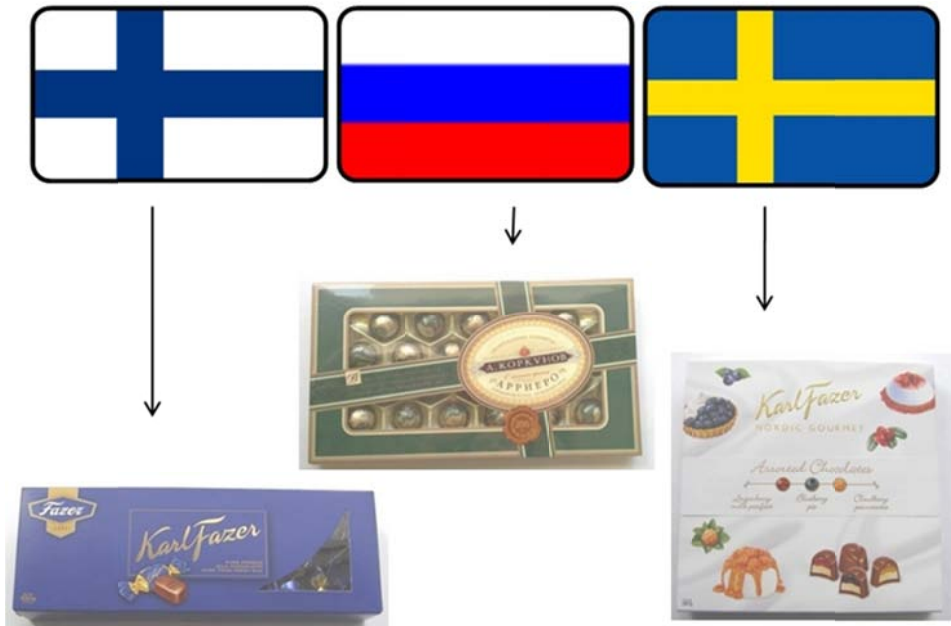


Figure 4.4. Gift chocolates “for a friend abroad”.

Example – Nordic Gourmet

It would seem quite difficult for a foreign brand to position itself as a local, but somehow the Swedes adopted Fazer Nordic Gourmet as their own in the focus group discussions. Swedish discussants chose Nordic Gourmet for their friend abroad as it represented the nature and style of Sweden. Overall, Nordic Gourmet appeared to have a successful package-product combination, as it was very much liked by all discussants and it also was considered suitable for various purposes (unlike the Geisha heart, which was the most common choice for a gift for a spouse, but was not considered proper for other purposes).

Although it was fascinating to discover these differences in gift chocolate preferences in the three countries, it was even more interesting to find out that people are not so different after all. Finns, Swedes and Russians do have many similarities when it comes to choosing gift chocolates. All discussants acknowledged the communicative power of package design elements and made similar choices, especially for “a colleague/friend at work” and for their spouse (cf. questions on page 50 and Figure 4.3).

Despite the fact that current printing technology would allow market-based customization of packaging, customization poses risks from the brand perspec-

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tive. If the product is packaged differently for every market, it is challenging to build and keep a coherent brand image (unless a versatile image suits the brand). For example, in Russia it would be difficult to alter the visual look of Fazer gift chocolates to be more “Russian”, since the reason why Fazer chocolates are popular is that they are produced in Finland and they look Finnish. Any modified Fazer gift chocolate would look like a knock-off of the real thing, which again could be quite disastrous for the brand. This is why the shared preferences (rather than cultural differences) between Finns, Swedes and Russians were given high importance.

4.6 Effective Brand Communication through Packaging

Young [6] outlines six principles for effective packaging to better address the needs of consumers (shoppers), and thereby build more competitive strategies for packaged consumer products. He argues that while it is not possible to reduce package design to a formula, several core principles are consistently linked to successful designs. The six principles are: (1) design for visibility, (2) design for shop-ability, (3) design for differentiation, (4) design for a single clear message, (5) design to drive consumption and (6) design for sustainability. Figure 4.5 illustrates how the six principles for effective packaging can be linked with strategic branding [14]. In the Messenger Package project, each design principle was evaluated from a brand perspective and a model for how brand strategy can be integrated into the package design process is illustrated in Figure 4.5.



Figure 4.5. Six principles of effective packaging (adapted from Young [6]) integrated with the brand perspective.

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Design for visibility (1) stands for gaining attention at the point of purchase, but it is also important to consider the visuals that build brand identity and make the brand recognizable. Similarly, design for shop-ability (2) does not only mean providing shoppers with an easy choice, but also involves giving shoppers a new reason (motivation) to buy a certain brand. Design for differentiation (3) is probably the most pronounced principle of package design, but what differentiation means in a particular product category and in what ways a brand is to be differentiated require careful analysis from both designers (visual experts) and brand managers (brand experts). Design for one clear message (4) is often forgotten in the package design process because brand managers want to emphasize several features of a brand. Prioritizing the brand characteristics will help package designers to focus on the essential. Design to drive consumption (5) builds on the fact that package design is more or less a tool to sell a product better. Brand recognition is built in the usage context (typically home) rather than during a quick shopping trip. Finally, everything about a package (visuals, information, material, shape, etc.) communicates something about the company producing it. Design for sustainability (6) should no longer be merely an option but a must for everyone (designer, producer, shopper, etc.) to consider.

When the Messenger Package student group⁹ worked with these guidelines, it was realized that one important aspect of Young's principles was missing. The six principles for effective packaging did not consider the package's journey from the producer to the retail environment. Therefore, one practical principle could be added to this list: "Design for logistics". The consumer is not the only one who interacts with the package and the brand; it is also important to consider those who make the brand available for purchase. If packaging solutions are designed with logistics and the retail environment in mind they are also more likely to end up on store shelves.

Bloch [15] has summarized this well: "*A good design attracts consumers to a product, communicates to them, and adds value to the product by increasing the quality of the usage experiences associated with it.*" The role of design is crucial for any product and package today. Like Figure 4.5 of Young's model is modified to include both design and brand perspectives, so should the two be in constant conversation with each other in practice too. In this manner, packages can

⁹ IDBM student group for VIP during academic year 2008–2009.

provide something meaningful. Meaningful packaging shall be discussed in the conclusions.

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5. Printing Packages to Communicate

The graphical package design elements for package communication (Chapter 2.2.) are produced during the package printing process. This chapter gives an introduction to digital package printing and presents digital package printing benefits, areas, challenges and the new possibilities offered. The studies and observations made during the Messenger Package project are also discussed.

5.1 Package Printing Technologies

Printing technologies can be divided into conventional and digital printing methods. These technologies can also be combined; this is called hybrid printing. Figure 5.1 presents a classification of printing methods.

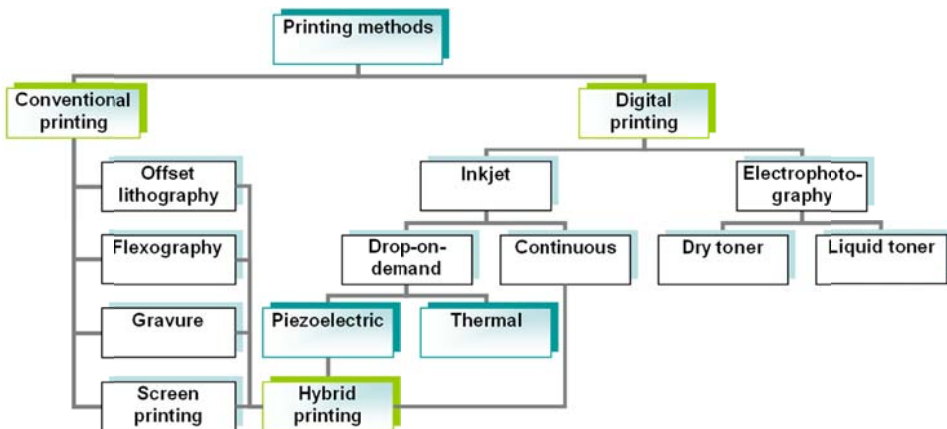


Figure 5.1. Classification of printing methods [1].

In conventional (also called mechanical) printing the information to be printed is reproduced on a printing plate or a cylinder. Then this plate or cylinder is

5. Printing Packages to Communicate

mounted to a printing press and the desired number of copies is printed. In this case all the copies contain the same information.

Digital printing methods are technologies that generate print without an original (printing plates or cylinders), straight from a computer. The benefit of this is that every printed sheet can be different. The most important digital printing methods are electrophotography and inkjet.

Electrophotography (also called laser printing) uses photoconducting materials that maintain their charge in the dark, but conduct under exposure. The latent image is transformed into a visual image by adhering toner to the surface of a photoconductor. The toner is transferred to the surface of paper using an electric field. During fusing, the toner is melted on the printing surface.

In inkjet printing an impression is made through the use of ink drops. The size of the smallest drop determines the finest detail that can be reproduced in the inkjet process. Dots smaller than one picolitre can be generated at the present level of inkjet technology. Also multicolour printing can be carried out as the different process colours can be ejected directly onto the printing surface. Inkjet technologies can be divided into continuous and drop-on-demand printing methods.

The main package printing processes are offset lithography and flexography. The use of offset and gravure has declined during the last decades, while use of flexography has increased. Due to the rapid development of digital printing technologies, especially inkjet, digital printing is rapidly penetrating into the packaging market as well. Figure 5.2 presents an estimate of the percentages of packaging printed with different printing processes.

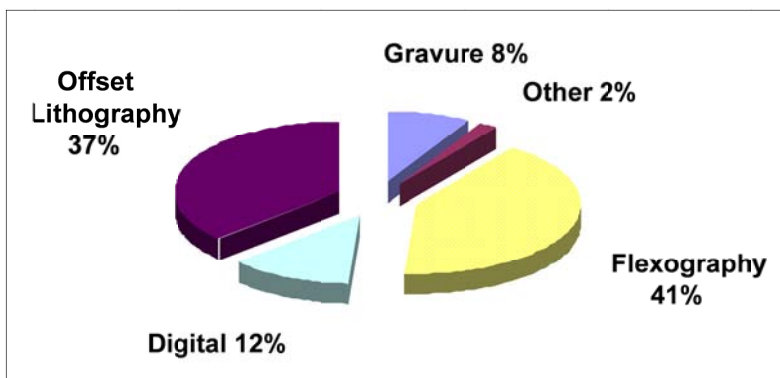


Figure 5.2. Percent of packaging printed by printing processes [2].

5.2 Digital Package Printing

The general trends in packaging production, such as shorter delivery times, larger selections and smaller product quantities, drive the development of package production and packaging logistics. It is also important to develop packages so that they feature better product information, a more visible trademark and an appearance that is more appealing to consumers. Today's consumers and the authorities require more precise product specifications and better product traceability. There is the tempting possibility of using consumer packages as a medium for advertisements.

Digital printing plays an important role in developing new operational and business models, because it provides a strong tool for adding value to packages.

- Digital printing can produce small and medium quantities of printed products cheaper and faster than any other printing method.
- Different work phases can be integrated, and the transportation and storage of semi-finished products can be avoided.
- Printing can also be decentralized and done in the locations where it is logistically most economical.
- New operational and business models can be developed.

The main benefit of digital printing is that it opens up possibilities for new ways of marketing and creates logistical savings. Digital printing can bring extreme flexibility to the package production chain and production as a whole can be transformed from storage production into on-demand production, in which the production of packaging or the whole product does not start until the order has been received. This model allows customized packages, shortens delivery times, decreases material waste, minimizes storage, shortens production chains, enables the production of new kinds of products and opens up business opportunities.

There are many reasons why companies are becoming early adopters of digital printing in the field of packaging. Information that VTT has gathered from real on-demand package printing cases indicates that companies adopting digital printing consider that conventional methods cannot accommodate changing requirements for more flexible and customized offerings [3]. Nowadays, more flexible package production is required due to the very rapid changes in consumer behaviour. Flexibility is also sought in order to print different language versions, barcodes, logos, images and marketing messages onto product packag-

5. Printing Packages to Communicate

ing while reducing costs and shortening product lead times. Companies also want to be able to make changes in packaging design at short notice and without incurring additional printing costs [3]. Furthermore, ecological issues are becoming more and more important all the time.

Variable data printing is also a significant driving force for digital printing. Multibrand companies that pack and sell products worldwide have become interested in variable data printing. When products are delivered to a variety of markets, different languages and information must be printed on the packages to cater to different regions. Printing of several different language versions can be troublesome for a company that delivers many different branded products all over the world, that is to say, various brands with various languages. In addition, when factoring in different carton sizes, that can mean hundreds of print variations per carton size. Also the needs of the customers and the brands they prefer can often change. Sometimes it is difficult for the retailers to know which products will be sold in the greatest quantities and when. This situation requires customization and on-demand printing.

There are two main utilization areas dictated by the present level of digital printing technology in which variable information printing on packages can be implemented. In the first case, the whole package is printed digitally, so that every printed package can be 100% different. Another way to utilize digital printing in packaging production is to use digital printing to add variable information onto pre-printed packages. Several hybrid printing presses, which utilize both conventional and digital printing methods, have been introduced.

The flexibility of inkjet technology also makes it possible to place inkjet heads at the right location in the printing or packaging process. For example, the heads can be placed in a conventional printing press after traditional printing or they can be integrated into a packaging line before or after packaging. In any case, each interface and procedure must be carefully pre-organized so that the actual workflow will be smooth.

In digital package production, it is important to understand that digital printing does not eliminate the need for graphic reproduction. In fact, variable data printing adds complexity to an already complex process. The digital job must also be adjusted to the requirements of the target printer, which means that it is still necessary to attend to the reproduction of details, colour management, the right content of text, etc. In the digital workflow, these tasks are easier and quicker to accomplish, because many of them can be automated or semi-automated.

5.2.1 Application Areas

Today, digital printing is already used in many of the package printing market sectors. The most important area to date has been labels because companies seek to get rid of high volumes of pre-printed labels that require stocking and inventory. Digital printing has also been used for other packaging applications such as point of purchase (POP) materials. Other relatively new areas are corrugated board, folding carton, flexible packaging and 3D containers.

The label segment is a particular success story for inkjet printing. Label printing was the first packaging application area for high-quality inkjet printing, because the narrow web printing of labels was technologically the easiest area to apply the first fixed array inkjet heads. Label printing does not even need sophisticated converting machines. Many label printing presses with compatible machines, inks and substrates are now available. These are especially designed for short to medium run production and are often intended to complement conventional higher-volume label printing presses [4, 5].

Corrugated packaging and folding boxboard printing has traditionally been high-volume production performed with robust printing methods like rotogravure printing. These materials can be used for both consumer and transportation packages. This is a challenging area, because most folding carton operations employ several printing and converting processes. Nowadays there are inkjet machines for corrugated and folding boxboard, which can handle large and thick carton board sheets with high speed. These machines can compete with flexography and screen-printing in short run lengths [5].

Usage of flexible packaging has increased over the years, often at the expense of other packaging media. Many of the features of flexible packaging are similar to those of labels, and can thus also be technically adapted to a packing line incorporating variable data. As usual, the pharmaceutical industry has led the way in utilizing digital printing technology in flexible packaging production. One potential application has been the printing of pharmaceutical blister packs. The food sector has also been interested in using digital printing for promotional printing as a valuable tool in capturing customer interest [4, 5].

Inkjet printing directly onto plastic, metal or glass containers is a tempting possibility. This would save money and help avoid problems caused by labelling in production. There are systems available for printing directly onto containers of any shape [4, 5], for example beverage cans, but some can manufacturers have also built their own solutions for their production plants. Also, many other

industries are interested in direct decoration of containers and even consumer products due to the logistical benefits of the approach.

5.2.2 Influence of Different Factors on the Cost of Digitally Printed Packaging

One of the aims in the project is to generate solutions to improve package communication. An essential part of the process is to evaluate the economical and technical viability of packaging manufacturing when using conventional and alternative methods.

In the case of digital package printing, the most significant product cost factors besides print format are ink or toner price, consumables and printing throughput, which are unit-level costs and incurred in the case of every single package. Digital printing is much more sensitive to run speed than conventional methods. Printing costs depend greatly on the technique used. Significant factors affecting the total costs of conventional printing methods include the number of colours, the number of printing plates and set-up time, which impact on the batch-level costs of products.

To assess the viability and impact of the digital printing of packages, case-specific evaluation and modelling is necessary. In every case, the economic viability depends on the total volume and market distribution of the supplied products.

One of the most significant factors affecting costs is the share of compact, solid print area, so this should be taken into consideration when designing packages for digital production [6]. Improvements in inkjet printing technology together with declining colour and equipment costs should still change the situation drastically.

If digital printing technology is considered as a complementary capacity to current flexo, offset or gravure production lines, the situation might look different compared to the replacement of existing capacity. New investment means additional capacity and will affect the current production lines. This gives the possibility to move small order sizes from the existing presses to digital presses, which could lead to increased run time on existing production presses and decrease the lost profits due to set-up time, provided that demand exceeds current supply on the market.

Digital package printing has business potential especially in niche markets where there is demand for more value added products, small run lengths and packaging formats with small ink coverage and various cut lengths. The total economic viability depends on the total volume and market distribution of these products.

In the Messenger Package project, case studies were selected in cooperation with companies and after discussions between VTT and partner companies. The focus was on packing production and printing activity, but some of the background information related to business processes and the value chain was evaluated in order to form a general view of the business environment in each case. The options for the case were limited by means of interviews and the list of questions so that digital printing would still sound like a reasonable option. In general this meant that bulk products and large formats were excluded. For example, a label on a glass jar was selected. The product can be seen in Figure 5.3.



Figure 5.3. One case product in the project: A label on a glass jar.

Simulation was done for a sample label with the following parameters:

- 4/0 colours
- 120% total ink coverage
- Print format: 40 mm * 100 mm.

In the project evaluation, comparisons were done for one fixed print job and the batch count was the same as the batch size. Dividing bigger batches into smaller orders would favour digital, as batch-level costs like set-up time for digital printing are smaller than for flexo.

According to the project, digital printing (Figure 5.4) was found to be a viable option for label printing. Flexo printing was found to be more viable for batches greater than 110,000 copies, while digital presses are better for smaller batches.

5. Printing Packages to Communicate

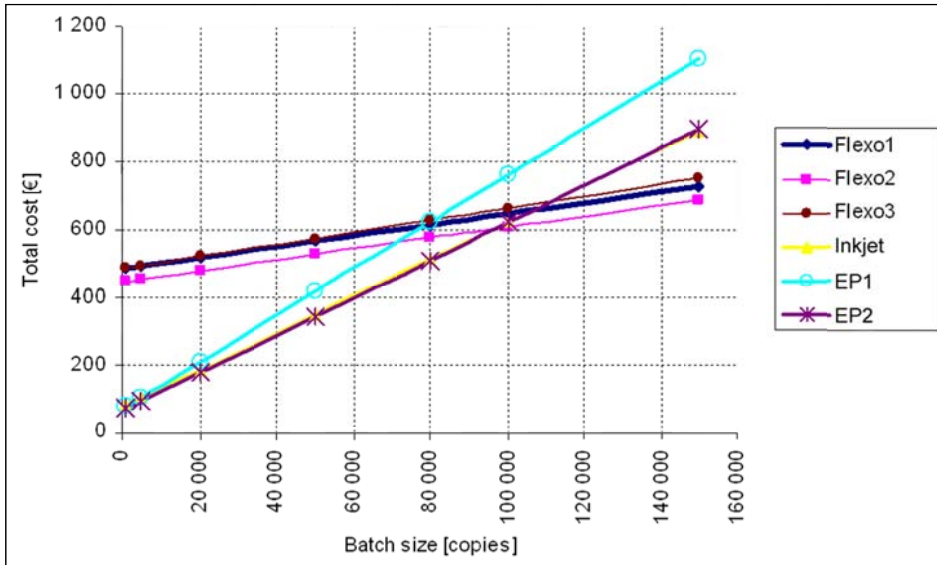


Figure 5.4. Estimated cost of a single print job as a function of batch size. Case study for label printing.

5.3 Challenges in Digital Package Printing

There are also several challenges to overcome – like questions of print quality management, compatibility of printing materials, package converting and costs of digital printing – before digital package printing can be fully executed. The different aspects affecting execution were studied in the project.

5.3.1 Converting

One bottleneck in the digital package process is converting, although there has been rapid development also in this area during the past years. Many converting stages are needed for packages after printing, such as scoring, die-cutting, varnishing, folding, gluing and filling. These stages should be integrated as an inseparable part of the digital workflow to avoid expensive manual work and to gain the greatest benefits from digital package production. Because the digital manufacture of packages is a new concept, there are only a limited number of suitable alternatives for most packaging applications. For this reason, converting machines must often be developed or at least tailored as part of a digital manufacturing line development project.

5.3.2 Material Questions

Digital printing methods set strict demands on the printing material, because the image is created directly onto the surface of the package. The print quality will decrease dramatically if ink flows on the surface of the coated carton or spreads in the capillary network of uncoated carton. These phenomena are especially crucial in high-speed inkjet printing where there is no time for the solvent to evaporate. The rapid development of UV curable inks has provided solutions for these challenges, because they offer rapid curing and thus enable printing directly onto difficult substrates like uncoated media or non-absorbent surfaces. Some inkjet presses use primers, so that good printing quality can be achieved even with paper grades designed for conventional printing methods.

5.3.3 Print Durability

Many packaging applications set strict demands for the durability of print. When digital printing is used in packaging applications, these demands have to be taken into account. For example, many packages have to stand up to rubbing against each other during transportation. One special group of consumer packages consists of packages stored outside at points of sale during summer and in some cases even over winter. These packages have to withstand long exposures to daylight and rain.

In the Messenger Package project, an accelerated weathering test was done in order to compare the weather fastness of digital printed samples and conventionally printed samples. The tests found clear differences between digital printing methods and conventional printing. Some samples offered excellent print durability even in harsh test conditions, while other samples faded considerably during the test.

The colour space of the electrophotography samples collapsed entirely during the test. According to this test, electrophotography is not a method for hard weather conditions. Inkjet printed fields did not practically change during the test at all and therefore the test suggests that UV inkjet can be said to be a very good method when weather resistant print is needed. Compared to conventionally printed plastic samples, the inkjet samples were seen to be more weather resistant during the test. Flexo colour faded considerably during the test, but the fading was even over the course of the test.

5.3.4 Product Safety

In general, product safety issues of packages are related to food contact materials. In fact, these demands do not only concern food packages; for example, packages of pharmaceuticals, medical ware, toys and electronics must also be safe. Because food packaging is part of the food production chain, the safety of food packaging is equally as important as food safety. Numerous regulations have been laid down for food packaging materials intended to be in contact with food.

Many different kinds of printing and ink systems are used in digital printing and hundreds of ink formulations are commercially available. The relationships of ink components are complex and may vary from ink to ink [7]. This makes it difficult to evaluate digital printing system suitability for the food production environment. Food packaging accounts for more than half of the global end-use market for packaging. To get into this huge business area, printing developers should take this question into special consideration.

The production of safe products begins with careful selection of materials, continues by ensuring uniform conditions during manufacturing and is finalized by testing the final product. The food-grade evaluation of digitally printed packages requires information on the specific materials used in printing. All the materials used in food package manufacturing have to be suitable for the final product. These include inks, primers, coatings, lacquers, etc. When choosing an ink for food packaging, its suitability for food packages needs to be checked individually every time. In addition, it should be realized that the printing ink manufacturer cannot ensure the safety of printed packages on its own – the printing process affects safety, too.

5.4 New Possibilities in Digital Package Printing

Digital package printing offers plenty of ways to add value to packaging. New functional characteristics and targeted messages can be created for consumer packages in order to create added value in the package itself by utilizing the latest digital printing techniques. This means, for example, that personalized and up-to-date product information, announcements or advertisements can be an integral part of a package. Also new kinds of logistic and anti-counterfeiting systems, based on innovative applications of digital printing methods, coding, indicators, printed electronics, detection systems and information networks, can be developed to optimize the supply chain.

5.4.1 Customized Package Printing

Digital printing methods offer a tool for customizing printed packaging elements. With digital printing methods, every piece printed can be different. “Customize” (synonyms: custom-made, tailor-made) means to make to specifications or make something according to specific requirements [8]. In short, customizing means modifying. This typically involves the customization of either text or images. New and remodelled versions are needed, especially in the case of seasonal and trendy products that have a short life cycle. In addition, in today’s market it is important to know the product and the end user and to specify the target group, because attempts to please everyone in the fragmented market are rarely successful [3].

Customization and personalization are often used interchangeably. However, personalization refers to customization according to the specifications of a certain person. Levels of customization are explained in Table 5.1. The most widely used and well-known examples of consumer packaging customization are cases in which a consumer could order products in packaging featuring their own chosen picture or design (customized according to personal specifications) [8].

Table 5.1. Levels of customization [8].

CUSTOMIZATION			
PERSON LEVEL		GROUP LEVEL	
Custom-made (tailor-made) for a specific person	”Mass product” customized according to person specifications	Customized for a specific target group	Different versions of a ”mass product” for more than one target group (versioning)

According to the results of a workshop in the project, customizing packages for target groups with specific characteristics could include modifying all of the packaging design elements (Chapter 2.2). Elements mentioned in the workshop are listed in Table 5.2. Naturally, all the printed elements on the packages can be modified by printing. These include most of the packaging design elements. It is even possible to modify surface patterns and scents by means of printing techniques. Types of customization that include changing the material, size or shape of the packaging represent very different kinds of approaches and require changes in material acquisition and packaging manufacturing systems.

5. Printing Packages to Communicate

Based on the results of the workshop, packages were found to have certain key characteristics that are important regardless of the target group. Most importantly, the participants felt that the characteristics related to convenience and especially the ease of use, e.g. ease of opening, closing and pouring, were important for all target groups and not as means of customization.

Table 5.2. Dimensions of packaging customization – printed and structural elements of packaging [8].

PRINTED	STRUCTURAL
images, symbols, logos	material
words, text, typography	size
colours, contrast	shape
surface patterns	
scent	

The customization of packages has possibilities especially with respect to the information efficiency of package prints. Consumer packaging serves the end user as a source of information (see Chapter 2.1). Customization with digital printing also provides opportunities for individualizing the package and using functional materials, e.g. in printed authenticating and anti-counterfeiting systems.

Besides providing product information for end-users, the information and messages printed on packages also serve other package functions. Messages and information are also printed on packages for reasons related to marketing, convenience, safety and supply chain management. Therefore it is possible to use package customization to serve any of the packaging functions [3].

Packaging applying customized approaches is expected to see substantial growth in the near future. Consumers can be divided into a great number of segments and target groups, and at the same time it has become more important to build a relationship with consumers. Delivering consumer value through package customization is both a great opportunity and a challenge. Successful package customization usually involves intensive consumer knowledge and a unique marketing idea.

5.4.2 Codes, Indicators and Electronics

There are several ways to add new functionality to packaging utilizing digital printing. These elements can be used for purposes such as identification, anti-

counterfeiting, logistics or information transfer and entertainment for consumers. VTT has for example developed systems in which camera phones are used for reading 2D codes. Based on our research results, several applications for these mobile phone readable inkjet printed codes have been identified [9].

Another application area for camera phones is inkjet printed optical indicators. Optical indicators are based on active compounds that undergo a definite colour change depending on changes in exposure conditions. VTT has for example developed a reversible heat indicator based on thermochromic inks. Several food quality and humidity indicators have also been developed [10].

Yet another possibility to use inkjet in packaging applications is to build printed electronics. VTT has for example developed and fabricated a game card demo that consists of six ink layers, all of which are inkjet printed on two different paper grades that are laminated together. Building this demo proved that this type of concept works even when printed on paper substrates, provided that the quality potential of the paper is matched to the complexity of the elements to be printed [11].

5.4.3 The Future

The special advantages of digital printing are design and production flexibility and customization, the ability to integrate it into traditional equipment, low waste levels, fast response time when near-line with the packaging process and lower warehousing costs for slow-moving consumer goods packaging. Also, when the applications of new functional features (e.g. printed electronics) are spread out, inkjet printing can be used as part of the production line.

Numerous aspects have to be taken into account when planning digital package printing applications. The inkjet printing method is developing very rapidly and it can for example be seen at different graphic arts fairs. During the last few years, the majority of exhibition hall space has been reserved for the industrial exposition of digital printing machines and equipment. This means that inkjet printing is now in the mainstream of printing technologies.

In the future, inkjet will be a major printing technology, but it will also be an increasingly important method in many application areas of manufacturing because it is a unique printing method that gives possibilities to build solutions that can not be implemented by any other means. It can be said that digital printing is only at the beginning of its evolution and revolution – the future possibilities of the technology are only limited by our imagination.

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6. Key Findings

In this chapter, the key findings of the project are presented and discussed. The chapter also includes conclusions and recommendations based on the project results.

From the project results, five main findings were concluded:

- Growing ecodesign trend and appreciation among consumers
- Packaging is highly meaningful for brands
- Customized package communication provides new possibilities for target group communication
- Holistic view on package communication encompasses elements of package design and many influencing factors
- Integrated approach to package development and design is beneficial and recommended

6.1 Consumer Trends: Ecodesign

The findings show that a growing number of consumers value packages that are ecological, yet prestigious in design; the Eco & Design segment expanded from 21% to 33% over the studied time period. The results are strongly supported by the current LOHAS movement – a market segment focused on health and fitness, the environment, personal development, sustainable living and social justice. In Finland, 33% of 15–75-year-old consumers belong to the LOHAS heavy and medium segments [1]. As it is not a marginal trend, it provides companies with significant opportunities to create value through ecological packages.

Like the ‘Eco & Design’ segment in this study, the LOHAS consumers are reported to value aesthetics and beauty. By putting package design in the forefront of product development, fulfilling the sustainability requirements for packaging and meeting the needs and wants of consumers, packages offer product manu-

6. Key Findings

facturing companies with significant sources of competitive advantage, resulting in both added brand value and a minimized ecological footprint of the products. In light of the results, fibre-based packaging materials (paper and cardboard) provide particularly significant opportunities for creating environmental value for consumers.

For the remaining consumer segments, the companies should aim at delivering value by maximizing the environmental benefits, but not at the expense of other important benefits. As the Messenger Package results show, all consumer segments rated ease of opening and overall convenience among the three most preferred attributes in packaging. Packaging, in general, has also become more acceptable and consumers value the increased food quality and safety. The results suggested that package cost is no longer a predominant factor in consumers' packaging evaluations.

6.2 Meaningful Packaging

Following the current consumer trends, products are expected to satisfy people's needs and dreams in various ways. There is now great demand for better brand offerings with innovative packaging solutions. A package is no longer just a carrier of a physical product; rather, it is an important marketing communications medium that is expected to deliver the brand message in an attractive way. A package makes a brand meaningful when it can demonstrate both the functional and emotional value of the brand. If the brand lacks content, no package design can make it desirable.

Making a package meaningful also implies that people are not treated as passive recipients of the desired brand message. The top-down thinking and expectation that all people should interpret the brand message in one particular manner is losing its relevance. People want to use brands to communicate their own identity, not necessarily to promote a brand. This is why package designs should also enable people to use the package for their own communication needs. For example, in the gift chocolate discussions, a chocolate box with the crown princess Victoria of Sweden and her fiancé Daniel sparked lively discussion. Many of the discussants preferred this chocolate box, but their reasons were different. Some thought it was a nice package because it featured a wedding celebration while others chose it because it would be good for a joke or a funny story to share. Brand owners cannot decide how people will eventually take their brand

and its package, and therefore the possibility of multiple brand interpretations should be considered even in packaging.

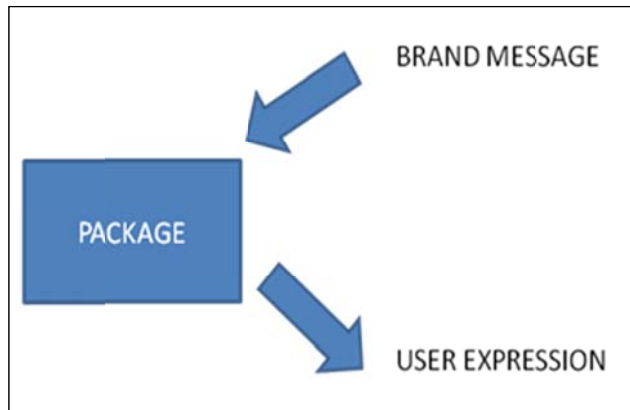


Figure 6.1. The two roles of package communication.

As Figure 6.1 illustrates, package communication is concerned with two things: (1) delivering the right brand message and (2) providing people with a vehicle to express themselves. Considering successful brand stories almost from any industry, brand success is not necessarily so much due to a new feature, but is often about providing a new meaning for an existing product [cf 2]. Similarly in Messenger Package, Kekkilä's soil is good soil, Fiskars' tools are good tools and Fazer's chocolate is good chocolate, and there is nothing else the products should be. However, these products can be given new meanings by the way the package communicates and presents the brand. While it is relatively easy for competitors to copy physical product features, imitating the meanings people associate with a particular brand is far more complex and difficult.

People choose a brand that represents important things for them and in that way a brand can help them to express who they are and build their own understanding of the world. Packaging provides a versatile means for brand owners as well as for buyers and users to communicate what is meaningful for them. Package communication is likely to become even more dialectical in the future. Good package design is sincere communication between the brand and the different people interacting with it.

6.3 Customized Package Communication

Customization has become a big trend in many fields. You receive advertisements at home that are targeted at you personally and printed with your name. Customization is also seen in fields such as fashion and even cars. This all indicates a growing tendency to pursue differentiation. It is interesting to explore this trend and its possibilities also in consumer packaging. Traditional printing methods do not provide good tools for customizing packages. However, the situation has changed thanks to the development of digital printing methods and the general demand for shorter series.

The concept of customized packaging designs offers plenty of ways to add value to packaging. On packaging, messages can be personalized for specific target groups or even one particular person. This gives completely new possibilities for marketing, for example. It offers more alternatives and better service to different consumer groups, since different things appeal to different consumers. Digitally printed customized messages on packages can also be used for campaign products when for example competitions are arranged or different design layouts are needed in trial marketing. In addition, because of the limited space available on packages, it is increasingly necessary to tailor different text versions for different language regions in international trade. Also, very flexible digital production enables last-minute changes to the packages to add relevant, up-to-date and highly focused information for different consumer groups.

To date, we have seen little use of customized messages on packages for target group communication. There are several possibilities to use customization for different functions of packaging and most of them are feasible using current printing methods [3]. However, customization is not suggested as a solution in every situation – and in fact the wrong message could irritate consumers instead of building their loyalty. Using packaging customization in new ways requires cooperation between different fields, vast knowledge of printing and packaging technologies, consumer research in order to know the target groups and creative marketing ideas to generate innovative solutions.

6.4 Holistic View on Package Communication

One of the main goals of Messenger Package was to take a holistic view on package communication. Instead of concentrating on one specific aspect of packaging, the aim was to work towards an understanding of package communi-

cation as one whole. People seldom choose a package simply because of its colour, shape or other specific design element, but we like a certain package and product because it feels right in several ways. For example, if a person has a preference for the colour blue and round shapes, it would not mean that he or she would only buy products that are blue and round.

Packaging communication and messages on packages are not limited to text and images on packages. Packaging communication refers to all the messages packaging sends to consumers. These messages are the result of combinations of different packaging elements and the factors influencing the communication. The packaging elements consist of a wide range of elements.

The package elements contributing to package communication discussed in Chapter 2.2 create the foundation for package communication. Holistic package communication comprises the package elements and all the influencing factors in the meeting of consumer and packaging.

Influencing factors can be categorized on the basis of their source. For example, the factors that are derived from the product and are influential in package communication to the consumer are: the function, price, quality, product category and novelty of the product. Sources of the influencing factors are: the product, brand, packaging, consumer, retailer and store, and the social and cultural environment. Influencing factors and their sources are listed in Figure 6.2 together with the elements of package design.

Package communication encompasses elements of packaging and many influencing factors. All the factors need to be considered in order to arrive at a holistic understanding of package communication and to fulfil the goals of package communication (as presented in Chapter 2, see Figure 2.1).

6. Key Findings

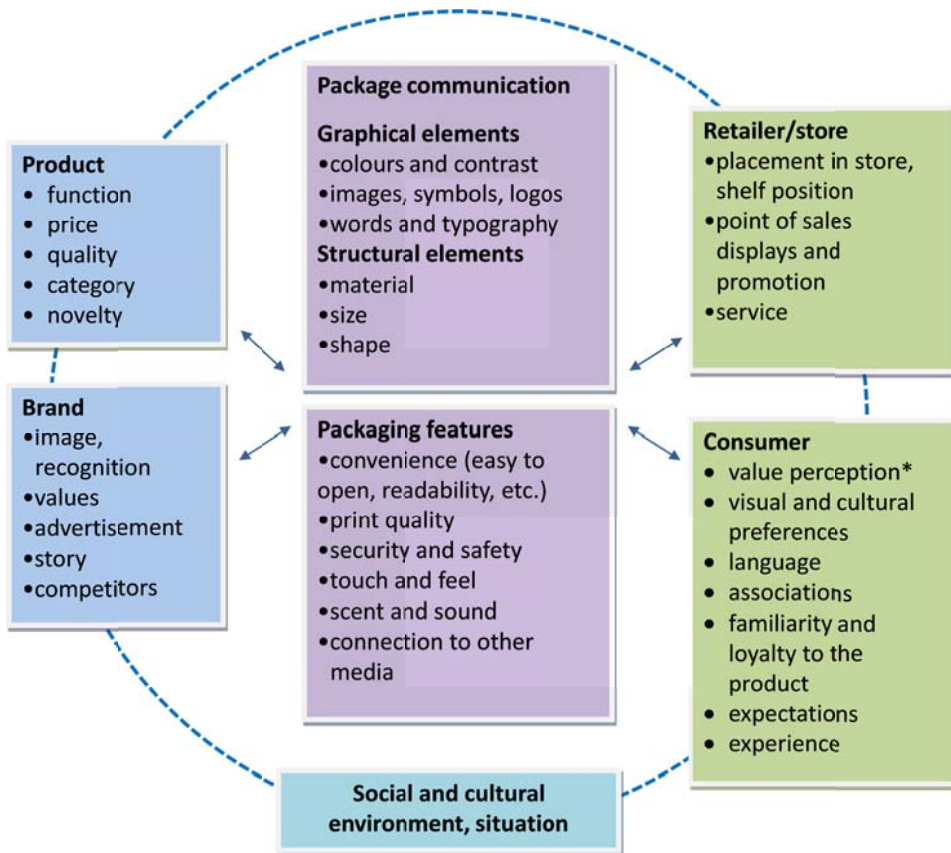


Figure 6.2. Elements and influencing factors of package communication to the consumer. *See also Figure 3.1 Factors influencing consumers' package value perceptions.

As Figure 6.2 suggests, successful package communication considers the realm of packaging holistically. Holistic thinking has also widened the understanding of different package communication elements. Packaging is no longer seen only as a visual surface; it is more often considered as a multisensory entity. In addition to the graphical and visual communication on packages, more attention has also been given to the touch, feel, scent and sound of packaging [4]. Multisensory communication is likely to play an important role in the package innovations of the future.

6.5 Integrated Approach

In addition to generating specific knowledge in the VIP sub-areas of markets, design and technology, the key objective of the project was to combine this knowledge to form an integrated view on package design challenges and possibilities. The project clearly evidenced that good package design is a result of the skilful and effective combination of market, design and technology knowledge and expertise. The rapid changes in technology, information and the economy call for new competences, such as skills in critical thinking, problem solving, decision making and teamwork at the intersections of different disciplines.

6.5.1 Practical Projects as an Integrative Platform

The two IDBM student projects (2008–2009 and 2009–2010) functioned as a practical platform to integrate knowledge and apply it to create new package design ideas for the future. Two teams of four students with backgrounds in business, design and technology were assigned the task of studying the communicative elements of packaging and coming up with new innovative package design solutions. Of the seven industry partners of the project, the brand-owner companies played a central role in these projects, as they assigned the package design cases for students to work with. Each brand-owner chose products that they wanted the student groups to analyze with a view to providing new insights and practical solutions. The chosen products represented three brands, which were a gift chocolate brand (confectionery), a gardening soil brand (soil products) and a pruner brand (gardening tool). In the first project, a specific emphasis was placed on visual brand recognition and the package design's role as a medium of communication. The second project, in turn, dealt with product displays in the shop environment. Both projects lasted almost nine months, which enabled the students to build a strong team and establish proper relationships with the industry partners.

In the projects, a Problem-Based Learning (PBL) approach was utilized [5, 6]. PBL emphasizes a “real world” approach to learning: it is a student-centred process that is both constructive and collaborative. PBL gathers and integrates many elements regarded as essential in effective, high-quality learning, such as self-directed or autonomous learning, critical and reflective thinking skills, and the integration of disciplines. Our experience with the project demonstrated that this type of a practical approach towards new package design development and more

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effective brand communication provides a fruitful learning experience both for students, the academic staff and the companies involved.

The results of both projects were positively evaluated by the participating companies. The companies not only received interesting ideas that they can take further in their new product package development but also were able to enhance the communication between their internal departments and teams through this multidisciplinary student project. In essence, the multidisciplinary approach and knowledge integration revolves around communication. The integrative approach can help companies to develop their internal skills in knowledge processing, communication, interaction and problem-solving.

The project showed that these types of integrative, analytical and practical approaches are particularly necessary when seeking new ways to explore the perceptual and experiential aspects of package design (or product displays) on a deeper level. It turned out to be a viable approach to tackling the multidisciplinary and multifaceted challenges of contemporary package design.

6.5.2 Creative Solutions through Multidisciplinary Integration

Integration also occurred in other parts of the VIP project, as the parties planned and conducted joint studies and proactively shared information with each other. In many companies, package design processes tend to be linear and cooperation between technical, marketing and design experts is more often sequential rather than continuous. The VIP project showed that, for package design brand owners, more effective and wider collaboration between different functions of the company improves the efficiency and effectiveness of development projects, as different parties come on board early in the process, resulting in higher flexibility in reacting to market needs as well as new creative and more customer-focused package design solutions. The multidisciplinary approach applied in the project can challenge companies to question their working structures and encourage the company's experts to engage in closer collaboration.

In addition to the practical and company-specific evidence generated during the project, the academic literature also proves that disciplinary integration and collaborative teamwork are highly beneficial for creative product development. Many key authors [7, 8, 9, 10, 11, 12] agree that multi- and interdisciplinary teams are at the very core of innovation and can find solutions to “wicked problems” [13, 14] that do not have a single definite answer but merely an array of

alternative solutions and possibilities. It is argued that multidisciplinary teams add to the variety, depth and quality of new creative explorations [15, 16, 17,18].

Hence, it seems evident that the integrative approach can help various stakeholder organizations of package design to benefit from new and fresh ideas and thinking, and to gain new insights that help to build up novel, innovative practices and package solutions. Disciplinary integration should be stressed particularly when seeking new creative package design solutions. It may not be so badly needed in “standard” development projects where only incremental product changes are implemented.

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7. Conclusive Remarks

The project concluded that there is a growing ecodesign trend and appreciation for it among consumers. The ecodesign segment expanded from 21% to 33% over the studied time period. The results are strongly supported by the current LOHAS movement – a market segment focused on health and fitness, the environment, personal development, sustainable living and social justice. In Finland, one-third of adult consumers belong to the LOHAS heavy and medium segments. As it is not a marginal trend, it provides companies with significant opportunities to create value through ecological packages. In order to leverage these opportunities, further studies on packaging solutions that share and communicate similar values as the LOHAS consumer segments are suggested.

The concept of customized packaging designs is seen to offer plenty of ways to add value to packaging. Traditional printing methods do not provide good tools for customizing packages. However, the situation has changed thanks to the development of digital printing methods and the general demand for shorter series. By using very flexible digital production, last-minute changes can be made to add relevant, up-to-date and highly focused information on packages, e.g. for different consumer segments. This is a great opportunity while keeping in mind that package communication is more and more responsible for making a product desirable to consumers and selling the product. Further studies are needed in order to exploit emerging opportunities in the fast developing field of digital printing.

Package design is a crucial element in strategic branding. It can enhance the desired brand image and build the brand to meet current consumer preferences. Packaging provides a versatile means for brand owners, buyers and users to communicate what is meaningful for them. More insights on the dialogue between packages and the different people interacting with them would be useful for future package design development.

7. Conclusive Remarks

As a whole the project concluded that an integrated approach to package development and design is beneficial and recommended. The project clearly evidenced that good package design is a result of the skilful and effective combination of market, design and technology knowledge and expertise. The rapid changes in technology, information and the economy call for new competences, such as skills in critical thinking, problem solving, decision making and teamwork at the intersections of different disciplines.

Executive Summary

The Messenger Package project considered package communication from multiple angles, focusing on integration technology, marketing and design know-how. Due to the multidimensional character of packages and package communication, cooperation between different fields plays an increasingly important role in the development of packaging as a messenger to better serve the needs of both consumers and companies. Therefore, the aim of the project was to bring different fields closer and by increasing mutual understanding provide comprehensive and integrated solutions for package needs – both functional and emotional. The different research topics in the project supported and complemented each other by bringing together the different aspects of package communication: consumers' views on packaging, a design perspective on packaging and the technological aspects required for more efficient package communication.

The project clearly evidenced that good package design is a result of the skilful and effective combination of market, design and technology knowledge and expertise. The rapid changes in technology, information and the economy call for new competences, such as skills in critical thinking, problem solving, decision making and teamwork at the intersections of different disciplines. It seems evident that the integrative approach can help various stakeholder organizations of package design to benefit from new and fresh ideas and thinking, and to gain new insights that help to build up novel, innovative practices and package solutions. Disciplinary integration should be stressed particularly when seeking new creative package design solutions.

Making a package meaningful implies that people are not treated as passive recipients of the desired brand message. The top-down thinking and expectation that all people should interpret the brand message in one particular manner is losing its relevance. People want to use brands to communicate their own identity, not necessarily to promote a brand. This is why package designs should also

enable people to use the package for their own communication needs. This development strongly affects package production: more flexible methods to produce customized packages are needed.

The graphical package design elements for package communication are produced during the package printing process. The rapid development of digital printing methods provides new, efficient tools for package customization. This means that the whole production strategy can be changed. For example, production to stock can be changed into production by orders. This enables the transformation of packages for mass markets into customized packages for particular target groups. Packages are now produced in smaller series with shorter life cycles because supermarkets are stocking wider selections of products and changing them rapidly, and this calls for updated package production strategies. To this end, digital printing can be utilized.

The special advantages of digital printing are design and production flexibility, the ability to integrate into it traditional equipment, low waste levels, fast response time when near-line with the packaging process and decreased warehousing costs. Furthermore, when the application of new functional features is spread out, inkjet printing can be used as part of the production line. These are great benefits, as package communication is playing a growing role in making a product desirable for consumers and selling the product.

According to the project results the current consumer attitudes towards food packaging are more positive than a decade ago. Packaging aesthetics was measured to have more relevance to consumers than before. More consumers agreed that colourful and impressive packages persuade them to try out new products. The findings also show that a growing number of consumers value packages that are ecological, yet prestigious in design; the ecodesign segment expanded from 21% to 33% over the studied time period. The results are strongly supported by the current LOHAS movement – a market segment focused on health and fitness, the environment, personal development, sustainable living and social justice. As it is not a marginal trend, it provides companies with significant opportunities to create value through ecological packages. For the other consumer segments, the companies should aim at delivering value by maximizing the environmental benefits, but not at the expense of other important benefits. As the results show, all consumer segments rated ease of opening and overall convenience among the three most preferred attributes in packaging.

The principal goal of a package as a messenger is to support the product: draw attention to the product, make the product desirable, inform about the product

and build a brand relationship. Packaging communication is not only text and images on packages; it refers to all the messages packaging sends to consumers. These messages are the result of combinations of different packaging elements and factors influencing the communication. All the factors need to be considered in order to achieve a holistic understanding of package communication and successfully fulfil the goals of package communication. To make the most of package communication, an integrated approach to package development and design is highly recommended.

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Author(s) Elina Rusko, Sanna Heiniö, Virpi Korhonen, Jali Heilmann, Toni-Matti Karjalainen, Panu Lahtinen & Marja Pitkänen		
Title Messenger Package – Integrating Technology, Design and Marketing for Future Package Communication. Final Report		
Abstract <p>The Messenger Package (VIP – Viestivä pakkaus) research project was carried out during the years 2008–2011 by three research partners: VTT Technical Research Centre of Finland, the Aalto University IDBM Programme and the Association of Packaging Technology and Research (PTR). The results and highlights of the project are presented in this report.</p> <p>Messenger Package aimed to provide solutions and guidelines for more efficient and intensive package communication, improving the functioning of packaging as a messenger. The project considered package communication from multiple angles, focusing on integration technology, marketing and design know-how. Due to the multidimensional character of packages and package communication, cooperation between different fields plays an increasingly important role in the development of packaging as a messenger to better serve the needs of both consumers and companies.</p> <p>The principal goal of a package as a messenger is to support the product: draw attention to the product, make the product desirable, inform about the product and build a brand relationship. Packaging communication is not only text and images on packages; it refers to all the messages packaging sends to consumers. These messages are the result of combinations of different packaging elements and factors influencing the communication. All the factors need to be considered in order to achieve a holistic understanding of package communication and successfully fulfil the goals of package communication.</p>		
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