

# Utilising the Potential of Design Briefs in Sustainable Packaging Development

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**Abstract:** Sustainable considerations in the development of product-packaging combinations require activities on both the strategic and operational level. As part of a company's vision, the strategic level of development targets the desired implementation of sustainability considerations. The activities of the multidisciplinary teams of marketers, designers and engineers, which specifies the achieved sustainability in finished packaging concepts, largely determines the operational level of product-packaging development.

Within multidisciplinary development teams, the challenge for designers is to process requests and ambitions into packaging design proposals. Packaging engineers and technologists translate these design proposals into feasible packaging concepts which meet producability, efficiency and cost requirements. Design briefs for packaging development are drafted by marketers and packaging developers, in cooperation with other disciplines; marketing and packaging design (sometimes development) are leading in checking and updating design briefs. Marketers are often in the lead concerning decisions related to the design and development of packaging, supported by management.

This research is based on surveys amongst Dutch packaging experts and interviews with members of packaging design teams. The findings are illustrated with practical packaging development cases, from the perspective of a packaging design agency. Design briefs form the interface between the different disciplines in development teams. However, current design briefs from marketer to the development team are currently not always applied for the specific implementation of sustainable considerations in packaging development. This article addresses this issue and the relation to the alignment of the desired (strategic level) and achieved (operational level) implementation of sustainability considerations in product-packaging development.

Literature on the suitability of design briefs regarding the implementation of sustainability from the perspective of product-packaging development teams and the relation to both the strategic and operational level is limited. We describe current issues regarding design briefs, focused on multidisciplinary teams and the implementation of sustainability considerations in product-packaging development processes.

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Keywords: packaging design, packaging development, design brief, design team, sustainability.

## 1 Introduction

In the domain of packaging development, the implementation of sustainability considerations is important for companies, retailers and NGOs. In strategic statements, such as corporate social responsibility (CSR) programs, packaging-related sustainability is often presented as an important aim (for example by Unilever [1] and The Coca-Cola Company [2]). Also international retailers develop and publish guidelines for sustainable packaging design, for example the Wal-Mart Packaging Scorecard, which focuses on the '7 R's of Packaging': Remove, Reduce, Reuse, Recycle, Renew, Revenue and Read [3]. Guidelines for sustainable packaging design have also been published by NGOs such as the

Netherlands Institute for Sustainable Packaging (*Kennisinstituut Duurzaam Verpakken*; KIDV) [4], the European Organization for Packaging and the Environment (EUROPEN) [5], The Consumer Goods Forum [6], the Sustainable Packaging Coalition [7] and the Sustainable Packaging Association [8].

These examples from companies, retailers and NGOs illustrate the current strategic importance of the implementation of sustainability considerations in product-packaging development. However, a strategic objective does not by definition lead to a structured implementation of sustainability considerations on an operational level. In this article, this (mis)alignment between the strategic and operational level of product-packaging development is addressed by means of two elements: the activities of multidisciplinary packaging development teams (where marketing, design and engineering disciplines interact) and the application of design briefs in packaging development.

In this research, sustainable packaging is defined as packaging which, in combination with the contained product, has a low environmental impact throughout the supply chain, including the use and end-of-life stages.

### **1.1 Theoretical framework**

In current literature, different success factors for the integration of sustainability considerations in development can be identified. When considering the interplay of the strategic and operational level, we can conclude that development efforts on both levels are required for a successful implementation of sustainability in development [9-11]. However, literature addressing the alignment of these levels in relation to sustainability in packaging development is limited.

Another success factor is the front-end implementation of sustainability considerations in development. Design and development teams have the largest degree of freedom in the front-end phases of development, often addressed as the fuzzy front end of innovation [12-14]. Related to this freedom in design, the implementation of sustainability considerations is most valuable during the front-end phases [9, 10]. In those phases, the environmental lock-in of design decisions is relatively low [15-17]. For product and packaging development, design briefs are a well-established item in design processes. The role of design briefs starts early in the design process [18-21], which is related to the degree of freedom and low environmental lock-in in these earlier phases of development.

The combination of the interplay of the strategic and operational levels of product-packaging development and the application and usability of design briefs forms the theoretical framework for this research.

### **1.2 The packaging design domain**

The separation between graphical and structural packaging design is a factor that distinguishes the discipline of packaging development from 'generic' product development. Graphical packaging design considers the two-dimensional properties of packaging (colours and graphics), structural design mainly considers three-dimensional packaging properties (shapes and sizes) [22-24].

In the Netherlands, this distinction in types of packaging design is reflected by the division of design agencies. Approximately twenty professional packaging design agencies and many smaller agencies (employing one or two designers) focus on graphical packaging design. In contrast, only a few agencies focus on structural packaging design. This contrast can be related to the investments necessary for graphical or structural packaging updates. Costs of tooling and production equipment (relevant for structural packaging changes) are allocated over multiple years, due to the high level of investment. In comparison, graphical design updates are relatively low-priced and will be implemented more often.

The graphical design agencies are often related to branding and publicity agencies. Therefore they are often the first party with which marketing is cooperating. Packaging is often seen as the extended part of advertising. Think about the moment of truth in marketing literature in which packaging is seen as the first moment of truth; the first view on the product is not the product itself but the packaging, as being introduced by A.G. Lafley, Chairman, President & CEO of Procter & Gamble, in 2005. This places graphical designers in an outstanding position.

## **2 Research approach**

The research is conducted by means of interviews with members of packaging design teams and a survey amongst Dutch packaging experts. The interviews and surveys separately address the current

'way of working' in (product-)packaging design teams and the implementation of sustainability considerations in packaging development. The findings are illustrated with practical packaging development cases, from the perspective of a packaging design agency. The illustrations are described as short intermezzos in the findings on sustainability. The design agency provided insights in design briefs for structural packaging design concepts and the process of packaging design in relation to sustainability. The projects concerned the development of packaging for both multinationals and SMEs.

## **2.1 Design team interviews**

The interviews with packaging design team members address marketers and account managers from companies active in the fast-moving consumer goods (FMCG) sector and design agencies that specialise in graphical packaging design and brand development. Thirteen interviews have been executed: six with designers, four with marketers and three with account managers. Even though the structures of the interviews were identical, the interviewer incorporated specific discipline-related questions into the interviews. Each interview took thirty to ninety minutes to complete and was recorded. The main topics in the interviews with designers are:

- Expertise and goals; insights in expertise and working field of the agency, the interviewee and the involvement in packaging design projects
- Approach of new packaging design projects; insights in the approach the agency is using for new packaging design projects
- Successful packaging designs introduced in the market; insights in what is needed according to the agency in the creation process of a new packaging design
- Ideal packaging design briefing; insights in the aspects the designers want to be taken up in a design brief
- Satisfaction about current design briefings; insights in the design briefings the agencies receive from marketers and what they think can be improved
- Satisfaction about current evaluation process of a packaging design project; insights in the feedback the designers receive from the marketers and what can be improved according their insights

The main topics in the interviews with marketers and account managers are:

- Clarity about position; insights in the role and responsibilities of the marketer in packaging design projects
- Packaging strategy; insights in the position of packaging in the company and in the packaging strategy
- Setting up the design briefing; insights in how the design briefing is set up
- Experiences with cooperation with (graphical) design agency; insights in what stage of the project the agency is approached and how the relation is experienced
- Satisfaction about current evaluation process of a packaging design project; insights in how the evaluation of presented designs is experienced

## **2.2 Packaging expert survey**

Besides the interviews targeting packaging design team members, an online survey for packaging experts is executed. The experts mainly work on structural packaging design, engineering, logistics, packaging line issues, to mention some and have insight in the practical side of the creation process. This survey specifically addressed the current implementation of sustainability considerations in packaging development. The survey focuses on questions regarding sustainability in packaging development and questions considering the use of design briefs in packaging development. Many questions separately address the managerial decision-making level of packaging development and the level of practical implementation. By means of this separation, the current alignment between the strategic and operational levels of sustainability implementation in packaging development is addressed.

The online survey is distributed via the platform of the Dutch Association of Packaging Professionals (*Vereniging Nederlandse Verpakkingskundigen*; VNV) and the network of packaging design graduates from the University of Twente, actively working in the field. All respondents to the survey were presented with the possibility to remain anonymous to the researchers, unless they actively share their contact information. Thirty-six packaging professionals responded to the survey. These experts come from various backgrounds in the packaging development discipline: mostly packaging design / development and packaging technology. A limited number of respondents have a background in marketing, product development or are employed on a managerial decision-making level. Of the respondents, 45% has over ten years of experience in their respective fields. The survey respondents work in various business sections, such as packaging for non-food and food products (both ambient and chilled), business-to-business packaging, beverage packaging and retail. In most cases, the efforts of single respondents cover a combination of business sections.

The survey consists of forty-three questions, plus six miscellaneous questions (addressing the background and experience of respondents). The questions are grouped into nine sections (by subject), each section is presented to the respondents on a separate page:

1. General importance of sustainability
2. Sustainability goals
3. Involved actors
4. Application of design briefs in packaging development
5. Actors involved in the application of design briefs in packaging development
6. Importance of sustainability in packaging development
7. Assessment of sustainability
8. Company-specific packaging sustainability approach

By addressing the sections separately, we limit the risk that respondents are intimidated by the number of questions. On top of that, the differences in focus within questions that are addressing (perceived) closely related subjects is easier to identify when presented as separate sections instead of a long list of questions.

### **3 Findings**

#### **3.1 Design process**

The design team interviews show that in packaging development projects, five stages can be identified: initiation, briefing, design, concept choice and final design. This is closely related to the analysis, synthesis, simulation and evaluation stages that are typical of generic product development cycles. Especially the briefing stage is addressed as an important stage, by both marketers and designers. During this stage, the design brief is formulated. This accounts for all interviewed respondents. The briefing is seen as a key element in the process and is followed by a rebriefing made by the designers.

The expert surveys show that in approximately 60% of the companies represented by the respondents, design briefs are used for packaging development. This is different compared with the design team approach. Marketers, packaging developers, product developers and packaging technologists are primarily involved in the drafting of packaging design briefs. Of these disciplines, mainly marketing and packaging development are leading in checking and updating design briefs, which looks to be in line with the results of the design team interviews although the difference between graphical and structural packaging design should be considered. After that, marketing and management are the main decision makers during the packaging design process, while the influence of packaging designers and packaging engineers is smaller. The content (or chapters) of design briefs strongly varies between respondents (and therefore companies). In some examples, design briefs are structured according to pre-defined formats, other respondents indicate that the structure of design briefs varies per project. This is shown in both the expert surveys and the design team interviews. Working with a rebrief is not very common for structural packaging designers.

Respondents of the design team interviews indicate that packaging development projects are either driven by research and development (R&D) or by marketing. R&D-driven projects are focused on

innovative packaging or development of new techniques and products. Marketing-driven projects focus on changes in the market (competitive products) and changes in consumer needs. Four levels of projects can be identified:

- Line extension
- Upgrade or relaunch
- New product development
- Revolutionary redesign (marketing-driven) or exploring new ideas (R&D-driven)

In line with these four project levels, different design briefs can be identified. A briefing for a line extension is concrete and mainly contains elements that should be used in the new design. The design contains a high level of 'copy-paste' work, off-the-shelf available from previous projects. An example of a line extension is the design of a packaging concept for a product with cherry taste, based on the same product with raspberry taste. In an upgrade or relaunch design the main focus is on a modernised graphical design and necessary changes in the information hierarchy of design elements such as the brand name, product name, product type et cetera. New product development projects require the efforts of multidisciplinary teams, which include disciplines such as packaging design, packaging technology and production. The composition of the team strongly depends on the type of project and the required input of certain areas of knowledge. This is also reflected in the expert surveys, where respondents indicate that a range of actors play a role in the process of packaging development. All respondents indicate that, besides actors from within a company, also external actors are involved in packaging development processes. Mainly material suppliers, machine suppliers, retailers and consumers play a role in packaging development. In revolutionary design projects, the final outcome (the packaging concept) is often uncertain. This is related to the variance in the combination of graphical and structural packaging design efforts in this type of project. Compared to the other project levels, cooperation with external design agencies starts relatively early in the process. A briefing is claimed to be less important, the emphasis is more on co-exploring possibilities and exchanging information between design team disciplines.

Looking at the different ways of working between graphical and structural designers and looking at the different types of briefings, it can be stated that from line extension to revolutionary redesign the importance of graphical designers becomes smaller in the project and that of structural designers is growing, while the briefing seems to be of less importance. It looks like that it is not in the scope of marketing to step into projects with revolutionary redesign; harder to manage, more uncertain about the outcome and higher investments needed. This also raises questions about creating a sustainable packaging design.

### 3.2 Sustainability

The respondents of the expert surveys indicate that the importance of sustainability is high; 5.5 (average) on a scale from 1 to 7. This relates to the strategic level: sustainability in general, sustainability in respondents' specific business sector and sustainability in the vision of companies represented by the respondents. However, the importance of sustainability considerations in practical packaging development is lower: 4.8 on the same scale.

*'Sustainability' is taken up as a requirement in many recent packaging design briefs. However, structure in this requirement lacks. In some cases, it is addressed and specified as a specific preference, such as "Use biodegradable materials". In other cases, it is implemented as a generic requirement: "The packaging has to be sustainable"*

**Illustration 1:** Sustainability in design briefs

The majority of respondents (close to 89%) indicate that costs are more important than sustainability as a packaging feature. Most respondents also indicate that restrictions related to available production machines are more important than sustainability. When considering the implementation of sustainability in design briefs, 53% of the respondents indicate that also time-to-market is a project indicator which is more important than sustainability, on top of costs and production line availability.

*In the design brief for a logistic packaging concept, 'sustainability' is addressed, besides requirements targeting maximum costs and weight. During the design process, several design concepts are presented to the client. These concepts have to pass an array of tests, before being accepted as a design proposal. This testing protocol shows to be very rigorous, resulting in the sustainability requirement to be discarded. To justify this, the lower weight of the new packaging concept (in comparison to the current packaging) is considered to cover the sustainability requirement*

**Illustration 2:** Sustainability versus other requirements

*A company is using a transwrap pouch packaging, which is filled on a vertical form-fill seal machine. The film is a printed BOPP film. The company wants to add value to the packed product, by adding 'convenience', 'market distinction' and 'sustainability' to a new packaging concept, while maintaining packaging costs. Integrating these functionalities into the packaging concept requires an added amount of material. The design agency shows the company that biobased materials with the correct barrier properties would result in doubled packaging costs. After this, the requirement on sustainability is discarded*

**Illustration 3:** Sustainability versus costs

The structure of design briefs varies per project (as addressed in chapter 3.1); 'sustainability' as a separate chapter or issue of focus in design briefs is mentioned only by a few respondents. According to these respondents' answers, sustainability is important, but not a main project indicator (such as costs, time-to-market or production line availability). Interesting is that only one respondent indicates that sustainability is more important than other project indicators in packaging development. This is a clear contrast to the indicated importance of sustainability.

*According to the design agency, coming up with real sustainable solutions is hard to realize without a research budget. However currently, in many cases, a new packaging proposal is claimed to be 'more sustainable' based on eco-efficient indicators like a reduction in materials, or higher efficiency in transport*

**Illustration 4:** Sustainability claims

The sustainability goals that are indicated by the respondents show that on a strategic level, reducing the amount and weight of packaging, the use of environmentally friendly packaging materials (based on the weight of the material, not on the application; so paper is better than plastic to give an example), the development of product-packaging combinations with a low environmental impact and the elimination of product damage in the supply chain are the main points of focus. In the transition from the strategic level into the operational level (the realisation of packaging designs), this focus narrows to reducing the amount and weight of packaging and the elimination of product damage in the supply chain. In literature, attention on the elimination of product damage is echoed by the well-established concept of specifying product-packaging combinations instead of packaging as a separate entity [25-29]. A minority of respondents indicate that analyses into the environmental impact of packaging is executed; according to 45% of respondents, the environmental impact of packaging is examined by means of a life cycle analysis (LCA) or a company-specific method. Only 25% of respondents indicate that the environmental impact of product-packaging combinations is examined; this contradicts the theoretical focus on product-packaging combinations in the light of sustainability.

These findings indicate that there is no strong eco-effective focus in current packaging development, either on the strategic or the operational level. The main goals target the reduction of the negative impacts of packaging, while goals that address an improvement of packaging's positive impacts (such as Cradle to Cradle and Circular Economy approaches) are mentioned only occasionally. Also goals such as the application of biobased or biodegradable materials or packaging that is easily separated are mentioned much less. In the expert surveys, 80% of the respondents indicate that a successful realisation of the sustainability goals is limited or non-existent.

*In some cases, biodegradability and recyclability in materials seem to be in favour for companies, but mostly it is not feasible. Biodegradable materials often do not have the needed characteristics concerning barriers, strength, sealability and costs. Recyclability can be a problem if multilayers or laminates have to be chosen, for example with an aluminium foil as barrier. The choice for recycled material is often limited because of food safety reasons; for example recycled paper which can be contaminated with mineral oils or chemicals such as bisphenol A*

**Illustration 5:** Biodegradability and recycled materials

### 3.3 Strategic versus operational levels

In the expert surveys, several questions (directly or indirectly) address the alignment between the strategic and operational level of development. As addressed in chapter 3.2, the results of the expert surveys indicate a misalignment between the strategic and operational importance of sustainability. We also find that a check on the alignment of design briefs (operational level) and the mission, vision and sustainability objectives of the represented companies (strategic level) is non-existent or hardly present, according to 67% of the respondents. Of the limited number of respondents that point to the application of environmental analyses of product-packaging combinations, 45% indicates that the results of these analyses are being used to improve and adjust the mission, vision and sustainability objectives of the company.

This seems in line with the different types of briefing from line extension to revolutionary redesign and the role of marketing in packaging design projects. The more structural the project becomes, the less a briefing is being used. The type of project seems to effects the alignment between the strategic and operational level.

Within the companies represented in the expert surveys, 72% show to focus on the alignment of employees' knowledge and the mission, vision and sustainability objectives of the company. In literature, education and training on sustainability within companies is addressed as a success factor for the implementation of sustainability considerations in development [9, 10]. Close to three-quarters of the respondents indicate that their company pays attention to improving the knowledge of employees on the subject of sustainability, by means of seminars, congresses et cetera.

*A packaging is made by thermoforming a bottom film, filling the packaging and sealing on a top film. The material is a multi-layer film with barriers. This is a packaging concept which is well-known, with one reel for the top film and one reel for the bottom film. The company which uses this packaging produces private label products as well as A-brand products. A new packaging concept is required, which has to be more distinct and 'sustainable'. Some of the new packaging concepts designed by the design agency are based on the current packaging, with the addition of a cardboard sleeve, which partly covers the packaging. According to the company's marketer, this addition of a cardboard sleeve makes the packaging look more sustainable. This was related to the source of the material (trees) and the end-of-life fate (the waste paper stream).*

**Illustration 6:** Importance of education on sustainability

## 4 Discussion and conclusions

The findings of the design team interviews and the packaging expert surveys show various valuable insights into the packaging development practice, the application of design briefs in this process, the implementation of sustainability considerations and the alignment of the strategic and operational levels. It has to be taken into account that the number of packaging design team interviewees and packaging expert survey respondents is limited. Another aspect of importance is that in the expert surveys, respondents were aware of the specific focus on sustainability in packaging development. Even though this can influence the validity of the findings, it is still considered to be valuable, regarding the various disciplines that are represented, the hands-on experience of the respondents, for many of them more than 10 years which means involvement in many packaging design and development processes.

The expert surveys and design team interviews show that design briefs play an important role during the packaging development process. Both marketers and designers recognize the potential of design briefs during the process. However, the specific contents of design briefs varies between companies. Sometimes even between projects in one company the structure of the design brief varies. This implies that also the applicability of design briefs can vary between different companies or packaging development projects. In projects that are going more into the direction of structural packaging design, from line extension to revolutionary redesign, briefings are used less. From the expert surveys, we find an indication of a misalignment between design briefs and the strategic level of packaging development. If there is no possibility to change the material, the distribution channel, the packaging line, the experts seems to understand that creating a sustainable packaging is an empty concept.

From both the design team interviews and the expert surveys we can conclude the importance of multidisciplinary packaging development teams, in which different disciplines play a role. This is in line with previous research (e.g. [9, 10]). During the whole process, marketing is one of the leading roles, mainly accompanied by (graphical) packaging designers and to a lesser extend structural packaging designers (both in the briefing stage) and management (development process decision making).

On the strategic level of packaging development, sustainability appears to play an important role. However, the expert surveys show that the implementation of sustainability on the operational level is limited. An indicator for this is the lack of strategic sustainability goals which are realised in practice, as mentioned by the packaging experts. In design briefs, sustainability shows to be a second-line requirement, behind costs, time-to-market and production line restrictions. Other research on sustainability in packaging design briefs shows comparable results [19]. In nearly all cases, respondents identify project indicators which are considered to be more important than sustainability. Even though this trade-off perspective on sustainability is not new (e.g. [18, 30, 31]), it is important to consider this in the domain of packaging development and related to the type of project and the role of management, marketing, graphical and structural packaging designers. It raises the question whether the current supply chains (in which packaging acts) and decision-making processes hinder a structural implementation of sustainability in packaging development. One could argue that currently companies do not allocate resources (either budget or time-related) to research these trade-offs. From comments in the expert surveys, we can conclude that in customer-focused packaging development processes, there is currently a main focus on the limitation of costs; only a clear (sustainable) added value is worth extra costs or investments. The current eco-efficient approaches towards sustainability (such as a reduction in packaging materials, or higher efficiency in transport) result in easy-to-comprehend added values. However, this limits the application of a broader, eco-effective approach.

In line with the trade-off between sustainability and other project indicators, the limited role of quantifiable environmental impact is interesting. Arguably, in order to structurally integrate sustainability in packaging development, a review of the environmental impact of design proposals is relevant during some steps in the process. Therefore, the finding that only 25% of the respondents in the expert survey indicate that environmental analyses of product-packaging combinations play a role is striking.

## **5 Outlook**

This research addresses the current status of the implementation of sustainability in packaging development in both the strategic and the operational level, by means of findings related to the design process in multidisciplinary teams and the application and contents of design briefs. Based on the findings we can address several points. This leads to issues which are relevant to focus on in follow-up research.

Within multidisciplinary packaging development teams, the interaction between design team members (e.g. information sharing and (iterative) decision-making processes and the order of subjects about which decisions are taken) is essential in any successful development process. This specifically holds for packaging development with a focus on sustainability. However, research into the practical application of this interaction for packaging development processes is limited. Therefore, the interplay and cooperation within multidisciplinary packaging development teams is a relevant research direction in which the role of marketing, graphical and structural packaging design and the other team members has to be detailed.

In this article, the alignment of the strategic and operational level of packaging development shows to be limited, when it comes to the implementation of sustainability considerations. A lack of knowledge



on the practical implication of sustainability could be an issue (refer to the current focus on eco-efficient solutions and the limited feedback from environmental analyses into companies' mission, vision and sustainability goals). The trade-off between sustainability and other project indicators hints to a limited perceived value of sustainability in packaging development, contrasting many strategic statements. Since this research does not address the source of this misalignment, although it shows that the lack of proper methods is an important one, it provides a valuable research opportunity.

Where graphical designer more often come up with ideas that can be seen as a dream and that are needed to guide companies towards new concepts, structural packaging designers seem to understand that if the product, the distribution channel and the packaging line cannot be changed, the dream cannot be realized. The front-end innovative ideas only make sense if revolutionary redesign is the type of development that is chosen to follow. Understanding these differences and using the briefing as a start for projects that can bring us more sustainable concepts, is an interesting area to research.

The relevance of the front-end integration of sustainability considerations has already been established in literature. However, this implementation in practice is currently limited, which is possibly related to a lack of tools for packaging development teams. In this research, we consider design briefs as one of the tools available for multidisciplinary development teams. Design briefs are suitable for a structured front-end implementation of sustainability in packaging development and can be aimed at multidisciplinary development teams. However, research into the application of design briefs for this purpose is limited. Questions regarding the contents, decision-making process and front-end implementation of sustainability in design briefs could direct future research. This research is valuable to address the potential of design briefs as a start for development methods for sustainable packaging development in multidisciplinary development teams.

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