

Tactile Qualities of Materials in Consumer Product Packaging

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Abstract

Marketing trends suggest an orientation towards more spending on packaging as a brand communication tool and less on traditional mass media advertising. Until now, graphic design of packaging, and to some extent shape, has received most attention in literature. However, aspects such as taste, smell and touch are likely to become important within brand building in the future. This paper discusses the role of tactile (touch) qualities of materials in packaging with focus on Fast Moving Consumer Goods (FMCG), such as toiletries, soap and food products. It is emphasised that attention to tactile qualities of materials when selecting packaging material in the design and development process may be a strategic choice. It is found that tactile qualities of materials may draw attention, communicate brand identity, signal quality, convey information about the content, create an emotional experience related to the product and influence usability.

Keywords: Packaging, materials, tactile quality, attention, product quality.

1 Introduction

In recent years, the recognition of packaging as a part of the marketing mix has become widely accepted. Expressions such as “the silent salesman” are commonly used to describe the role of packaging. Due to the increasing number of products in the marketplace, traditional mass media communication is being redirected to the point of sale [1,2]. Packaging has become a significant marketing channel because of its presence in the shop, combined with its strong influence on customers’ decisions [1]. Customers in Norway are exposed to 300 products per minute in average in a grocery shop and use only approximately five seconds to determine whether to purchase or not [3]. Competition is increasing, making packaging design a challenging field.

Various aspects of packaging are emphasised in marketing and design literature. Packaging is often seen as an integral part of the product, making it difficult to separate the two [4]. The packaging is the wrapping of a product, and is either directly in contact with the content (e.g. hand cream and chips) or contains one or more objects (e.g. carton holding a light bulb). The type of packaging material required is bounded by type of content, transportation, legislation and environmental issues. The level of protection needed depends on product, distribution channel and shelf life. For Fast Moving Consumer Goods (FMCG), the cost of packaging and distribution is also highly relevant, as these products are low priced and competition is strong. Additional requirements that need to be fulfilled are attracting attention from customers, providing newness and informing consumers [5].

Engaging touch in packaging design

Several reasons exist why packaging as communication tool is increasingly important. Its presence at the point of sale, replacing a salesman, is emphasised in literature [6, 7]. Through packaging it is possible for companies to reach almost all buyers of a product category in the shop. Also, its increasing importance may be related to the growth in number of purchasing decisions made at the point of sale. Next, managers are beginning to realise that for relatively homogeneous consumer products, differentiation and creating identity through product packaging is highly relevant; the increased number of available products obviously creates an even bigger need for differentiation. Finally, and most important with respect to vision and touch; customers are actively involved with packaging, both in the shop and at home [2]. Involvement is assumed to include use of vision and touch, opening up for investigating the possibility of actively using tactility (touch) as communication tool; to communicate positive aesthetic, experimental, functional, symbolic, and informational benefits towards the customer [1]. Traditionally, graphic design has been the main tool for drawing customers' attention and communicating product qualities in packaging [6]. Some research on package shape as a differentiator is also reported on [8,9]. According to Mason, the sense of touch is the key to firing off all the other emotions and senses [9], which include taste, smell and sound as well. However, studies of market positioning have traditionally had little focus on the tangible codes of packaging [2]. In general, tactile qualities of the package materials have received little attention. It is an underestimated factor in marketing and design [10], even though graphic design and shape are influenced by material choice as well.

Tactile qualities of packaging are strongly related to material choice. Materials can feel rough, soft, smooth, hard, warm, cold etc. The thickness and type of a material can make something feel expensive or cheap. The level of glossiness relative to other products within a product category may send signals of exclusiveness or quality. With this in mind, it is highly relevant to have knowledge about how the influence of various materials on consumers can be used in packaging design.

2. Objective and structure of the paper

Given the above considerations, the research question *How may tactile qualities contribute to drawing attention and communicating product qualities?* is considered in this paper. The main aim is to review and structure literature in the field of packaging and materials, with an emphasis on tactile qualities, focusing on packaging of Fast Moving Consumer Goods. These are consumer goods found in the grocery shop, including commodities such as personal care products, detergents and kitchen cloths, food products and items such as light bulbs, tape, batteries and paper products. They are relatively low priced and turn-over is high.

Terminology

The term "tactile" has various and sometimes conflicting meanings in literature. Here, it refers to experience through the skin, and relevant material properties are texture, hardness, elasticity, flexibility, temperature, weight and balance [11,12]. An object can have tactile qualities ranging from appealing to repulsive, being pleasant or unpleasant to touch [13].

Researchers have various interpretations of the complex term "customer value". Here, it refers to customers' evaluation of tangible and intangible elements of the product's attributes, attribute's performances and "consequences arising from use that facilitates (or block) achieving customer's goals and purposes in use situations" [7]. Thus, evaluation is carried out in any stage of the purchasing and use process. The term "product quality" refers to the benefits provided by the product. "The quality of a product is its ability to satisfy, or preferably exceed, the needs and expectations of the customers" [7].

The term “sensory experience” will refer to perception through senses, and is not limited to perception through skin. “Emotional experience” implies emotions or feelings generated by a packaging. The sensory experience of eating a cheese may be moist and firm, whilst the emotional experience may be high quality and old-fashioned.

3. Literature review

Packaging influences both the purchase and usage of the product. According to Löfgren, two stages make up the total customer experience, namely the first and second moment of truth. The first step deals with *customer expectations* and the second with *customer experiences* [7], as visualized in Figure 1 after Löfgren. The model is used to connect attention and communication of product qualities to purchasing and use.

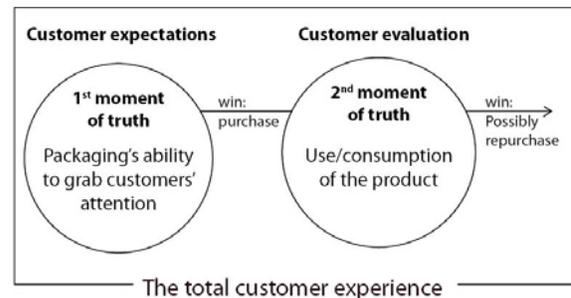


Figure 1. The total customer experience

The first moment of truth has to do with attracting customers’ attention in the shop, and providing information about content, use and benefits. At this stage it will generate expectations in the customer’s mind regarding quality and value. If winning the first moment of truth, consumers buy the product. Later, the product is consumed or used. This situation is called *the second moment of truth*. At this stage, Löfgren is mainly concerned with usability and providing sufficient information about usage. Winning the second moment of truth implies that the customer re-purchases the product [7]. According to Löfgren, consumers evaluate the product’s quality in both situations. Zeithaml claims however that product quality evaluation takes place only in the latter situation [14]. Although this paper has a different aim than Löfgren, his model is useful to illustrate the various ways customers interact with the tactile qualities of the packaging material.

Below, two main aspects related to packaging are discussed from a marketing perspective: *attention* in the shop and *communication of product qualities*. *Attention* is related to the first moment of truth, communication of product qualities is highly relevant in both the first and second moment of truth.

3.1 Attention and persuasion

Drawing attention means that customers become aware of the product. This makes it more likely for a brand to increase sales by entering customers’ consideration set. According to Porter, competitive advantage can be gained either by having the lowest selling price or through differentiation [15]. Differentiating attributes makes a product draw attention if clearly communicated. Bright colours and graphics are common ways of getting customers’ attention, but with too many products screaming on the shelf, it becomes difficult to stand out [16]. Different arguments exist: Companies often adapt competitor’s visual look [17], with the result that competing products often have the same colour and typographic style. This is opposed to the use of the Von Restorff Effect, also called isolation effect, which is a phenomenon of memory. It implies that differences are easier to remember than what is perceived as common [18]. When a packaging differs in some way from customers’ past experiences, it is easier to remember than packaging which is similar to the rest of the product category.

As seen, there exist contradictory arguments. On one hand, companies want their products to stand out. Simultaneously, they imitate the appearance of competitive products. Customers use the similarities as category cues [17] for recognition. This makes it interesting to explore new ways to differentiate, whilst still make customers recognise the product category.

In literature about corporate identity design and design management, brand identity design mainly refers to graphic elements [9]. Shape as part of brand identity has received some attention, especially in product design literature, and some researchers have studied shape as tool for brand

communication towards customers [19]. Surfaces and textures, on the other hand, have received less attention [20]. However, Lindstrom states that 82% of the companies found on the Fortune 1000 list could take advantage of connecting particular tactile sensations to a brand. Bang & Olufsen and Coca Cola are among companies which have successfully applied this strategy [6].

Tactile appeal and persuasion

The persuasive effect of touch has been a topic for research by Peck. The study is based on the assumption that people have different needs with regard to touch. Peck suggests that some perceive tactile information as more salient than e.g. verbal information, and are more likely to use this for product evaluation. Through touching products in the shop, this group extracts useful information and makes judgment about a product. They prefer to open up the package and smell the content, or touch a sweater to make judgments about the quality, e.g. to find out if the sweater will be warm enough in the winter. Further, Peck describes another group of people, who have a more hedonic-oriented approach to touch [13]. They use touch only for exploration of the sensory experience, not to get information [11]. Peck distinguishes several factors that play a role in whether an individual will be motivated to touch a product to obtain tactile information prior to purchase. Individual factors refers to the extent to which a person uses touch to get information. Product factors have to do with the product's salient material properties. Finally, situational factors may hinder or support the opportunity to touch.

3.2. Communication of product qualities

Customer value is considered a major source for competitive advantage within marketing and a significant factor to success [21]. Product qualities are communicated towards, and interpreted by, customers, and contribute to forming customer value. Despite the importance of customer value, little work has been done to detect the packaging's influence on forming consumers' perception of a product. In relation to packaging, four aspects of product value communication are distinguished here which all may positively influence customer value [14,21]. These are perceived quality, sensory experience cues, emotional experience and usability.

Perceived quality

Customers' perception of quality is influenced by several factors. It differs from actual quality, and is a personal judgment about a product. Besides price, Zeithaml identifies package graphics and the brand name as equally important influencing factors. Detecting which cues customers use to evaluate quality should be prioritised by marketers and packaging designers [14]. Zeithaml does not mention the influence of materials on quality perception, but others have researched the emotional effects of packaging materials. Researchers have attempted to develop a lexicon which consists of subjective descriptions of surface textures [20]. Results are limited however, due to the problem that materials appear differently depending on the context. A plastic type used in a shampoo bottle will generate a different emotional response if used in a jam container. Generalising findings is therefore difficult.

According to Löfgren, Kano et al. classify perceived quality in five categories [7]. One of them is particularly interesting, namely the "attractive quality" category, referring to qualities that are not usually expected by the customer. Rather, "attractive qualities" are a surprising element that may positively influence quality perception. A textured packaging material may be an "attractive quality", making the product appear sophisticated. However, there is a risk in communicating that a product superior to its competitor, when in fact it is not. This mistake can lead to product failure in the market place [17]; packaging needs to create correct expectations [22]. It is consistent with Löfgren's model, emphasising the need to meet expectations in the evaluation phase. The opposite situation also leads to challenges. Research has indicated that less familiar brands, such as private labels, suffer from inferior quality perception in the mind of the customers, although actual quality may be relatively

high. Marketing strategies that focus on perceived quality rather than just price may be beneficial for such brands [1].

Sensory experience cues

There is a growing demand in society for convenience and quick shopping of products. Also, the need for companies to gain “right first time” is increasing. This means that the customer is less likely to repurchase the product if it does not satisfy the first time [7,22]. In terms of food products, the sensory appeal and the visual appearance of the packaging strongly influence consumer acceptability [22]. Traditionally, graphic design has been used both for tempting customers’ senses and for providing product information, e.g. through product pictures [1]. Furthermore, materials may be used to articulate taste (sweet, soft, tangy), smell (cool, exotic, nostalgic), hear (smooth, rough, textured) and touch (crisp, dainty, contemporary) [10].

Emotional experience

The emotional experience of FMCG generated by packaging (materials) is beginning to receive some attention by researchers. Until now, the emotional experience has only been considered in expensive and luxurious products [20]. According to Löfgren, emotional cues are experienced in both moments of truth, but are most important in the second. Löfgren suggests that emotional cues may enhance benefits communicated by the packaging in the first moment of truth [7]. According to Mason, the appearance of a packaging is to a large extent decided by choice of material. The packaging’s emotional values, meaning how the designer wants a packaging to feel, should be considered early in the design process. Mason claims that “The codes lie beyond the packaging itself and are drawn from the outside world, principally popular culture.” [13].

Usability

From an industrial design perspective, usability is an important criterion when designing a new packaging. Löfgren emphasises the need for user-friendliness to get customer satisfaction and win the second moment of truth. Still, marketing literature is less concerned with this perspective. Some companies have succeeded in the market due to easy-to-open packaging or convenient resealing solutions; as consumers become more and more demanding, user-friendly packaging is likely to be an important selling-point in future packaging. Selecting a material that contributes to the usability then becomes important.

4. Discussion

4.1 Attention

Aspects related to attention are discussed in this section, in order to detect where tactile qualities of materials may influence packaging design objectives.

Differentiation problem

In terms of differentiation, contradictive arguments exist. On one hand, companies want their product to stand out from competitors, whilst on the other hand they imitate competitors by using similar packaging elements, which again becomes category cues. Both attention and customer recognition of the product category is needed and for companies, this is a challenge. For every product, a company needs to avoid the two possible pitfalls: lack of attention and becoming too different.

To create recognition, Mason suggests exploring the options available within packaging. In “experimental package”, materials are one factor that can make a package instantly recognisable [10]. This should however be done with care, since customers use certain similarities as category cues. Nevertheless, if using a material significantly different from the product category, other elements such as graphics and shape may create the necessary category cues. In such cases, materials can be used for distinction. Despite the risk, a number of companies nowadays use this strategy. On the Norwegian market, mayonnaise has traditionally been available in metal tubes or flexible plastic

bags encased by carton. In recent years, imported mayonnaise has been introduced in the market. Imported variants tend to come in either glass containers or tubes of rigid plastic. If these are not placed next to traditional Norwegian variants, customers may not detect them, as they look for familiar cues. This problem is, however, only relevant in the introduction stage, before customers learn the new category cues. A more subtle way of differentiating may be the use of a material familiar in the product category but with a particular texture. According to Mason, textures can be used to add value to the product and hence contribute to creating differentiation [10].

Brand identity

Creating brand identity through materials in packaging seems to be an overlooked area. However, suggestions on how to create product family through packaging material can be made. For example, a specific material or texture may be used in several products, or a tactile element may be applied to a group of products, creating a product family and recognition. In both cases, the tactile element or surface may be a repetitive element in the marketing mix. One example is the soft feeling of touching a detail on the shampoo bottle being emphasized in TV commercials, in magazine advertisements and on boards as a form of a “360 degrees marketing” strategy.. The strategy implies communicating consistent messages towards consumers in all marketing channels. More knowledge about how materials may influence brand identity would be beneficial for companies to fully explore how to enter consumers’ minds and be recognised.

Tactile appeal and research criticism

Using tactile elements as a strategic tool in marketing is most relevant for customers who prefer sensory information over verbal, according to Peck [13]. Avoiding negative sensory feedback in touch elements is important as people with lack of need for exploring through touch may reject the product. To uncover what is considered negative, customer feedback in the product development process is necessary to fully understand the impact of tactility, for example in separating between tactile surface (the whole material of a packaging) and a tactile detail. Also, tactile perception may differ among various age groups.

Visual and tactile mismatch.

Löfgren does not include perception of tactile qualities in his model. However, for packaging of FMCG, it is likely that material surfaces are perceived mainly through vision in the first moment of truth. Since only few seconds are spent on deciding what to purchase, exploration of the tactile qualities through touch is not as relevant in the shop as in second moment of truth. When customers use the product, they perceive through both touch and vision: “*Tactile design creates illusions: You think it’s something, then you touch it and it’s not*” [27]. Sometimes there is a mismatch between perception through vision and later perception through touch. This misinterpretation leads to several questions of interest to packaging designers. What are the consequences of misinterpretation? How can this possible misinterpretation be utilised in the design process? Since customer decisions in the shop takes only few seconds, customers may not notice until they use and evaluate it. Will expectations generated in the shop be met? Using Löfgren’s theory in this case, the answer would be no. Disappointment is therefore one possible outcome. Future research on this topic is highly interesting.

4.2 Communication of product qualities

Quality perception

The influence of materials on perceived quality is assumed to be significant. Usually, materials serve as cues to quality in packaging of more expensive products than FMCG [20]. However, designers can use tactile qualities of materials strategically to increase customer value. Some materials feel cheap, whilst others are associated with luxury. Detecting what message the materials signal and what sort of associations the customer has with the material is then important for companies. Due to the

problem of context dependency, both general and more specific knowledge is needed for companies to understand materials as signals of quality.

With respect to perceived quality, customers' level of involvement in the products is interesting for designers to consider. FMCG are low-involvement commodities relative to products such as clothing, furniture and cars. However, one may distinguish between levels of involvement within FMCG. For products targeting customers with a certain level of involvement, signaling quality in both first and second moment of truth is relevant. Higher levels of involvement often imply higher expectations to the product. For example, due to an increasing focus on nutrition and obesity in society, some consumers want healthy and high quality food. Companies targeting this segment should provide cues to quality. Intimate hygiene products and shampoos are other types of commodities that consumers, particularly women, have strong opinions about. The perfume industry emphasises the unpacking experience through packaging materials [20], and this may also be relevant for high quality food and certain personal care products.

Considering the lifetime and use context of packaging, in design is important to meet expectations in the second moment of truth. If a product disappoints after a few weeks, repurchase is less likely. Where and how long the packaging is kept, and also how frequently it is used is relevant when choosing materials. It is necessary for the material of the packaging to last throughout the product's lifetime to win the second moment of truth. The example below illustrates this. A salt sprinkler needs to maintain a high quality perception throughout its lifetime, which may be weeks, in the kitchen, on the dining table or in a cupboard. It may appear exclusive due to graphic details and use of metal, but using a thin metal box covered by a layer of transparent plastic degrades fast, as it does not return to its original shape after a gentle push (Figure 2).



Figure 2. A metal salt sprinkler significantly degraded long before the end of its lifetime

Sensory experience

Mason claims that materials can articulate e.g. taste and smell. So, it becomes interesting to explore how to make this applicable. If it is possible to link specific associations to a particular material, one may potentially convey information about product attributes to customers by choice of material. An example may be the use of a piece of textile or wood to give the feeling of 'tradition', rather than writing the word "traditional" on a (otherwise perceived as 'untraditional') plastic packaging. If materials and graphic information work together by sending consistent messages towards the customer, a message can assumably be conveyed more powerfully. A next step may be to explore how taste can be communicated through materials. According to a study by Mason, the sensory experience of a cheese may be "rubbery" and a rubbery plastic material may implicitly convey this. However, it simultaneously implies the risk that consumers do not comprehend the cue. Further research opportunities lie ahead.

Usability and tactile details

Designers should seek affordance in packaging design, by striving to use materials that correspond with the intended function. This will make the product easier to use [18]. Simultaneously, improved usability increases customer value, according to Löfgren. If a packaging affords pulling to open, but in fact scissors are needed, the design is as inefficient as difficult to understand and use, and expectations are not met. Tactile details may serve as cues to, for example, how to open packaging. Also, they may communicate information cross-culturally, as language barriers are eliminated.

Environmentally friendly packaging

Interest in environmental issues is growing in society. Increasingly, labels appear to communicate product value in terms of sustainability, making it difficult for consumers to distinguish and notice. Using materials perceived as environmentally friendly may be an efficient way of communication. People might perceive gray, unbleached carton as environmentally friendly, whilst plastic may be regarded as less sustainable. Although this may not correspond to actual facts, it should be taken into consideration when the objective is to communicate sustainability towards consumers.

Feedback on tactual experiences

It may be difficult for a company to evaluate customers' perception of material qualities for two reasons. First, perception is bounded by its context, calling for product or product category specific testing. Second, customers may find it difficult to discuss perceptions and emotions because they are not trained in doing so and perhaps lack vocabulary. A guide for describing tactual experiences has recently developed by Sonneveld [12]. It is developed both to facilitate communication with users and design for senses, and covers five domains; movements made with the object, tactual properties perceived, bodily sensations of the user (meaning sensory experiences), affective behaviour experienced by the user, and feelings generated (emotional experiences).

5. Synthesis

This section aims to synthesize the previous literature findings and discussion through presentation of a matrix showing design application areas regarding the tactile qualities of materials in packaging design. The matrix below suggests how designers can use tactile qualities to deal with relevant design objectives. The propositions are based on literature findings (marked with references). Relevant application areas are marked in italics. Three design alternatives are used to structure the findings, which are 1) selecting a new material, which involves using a material which is new or unconventional for the product category, used for main parts of the packaging; 2) adding tactile details, which may be most relevant to use as a differentiating factor for people who enjoy exploring product through touch, in a more subtle way than with an unconventional material; 3) changing texture, focusing on using a similar sort of material but with a different texture or thickness, as an option to influence perceived quality and usability in the second moment of truth.

6. Conclusion

The role of packaging as a marketing tool has become increasingly important in recent years. Traditionally, graphic design has been the main way of drawing customers' attention and communicating product qualities in packaging. Strong competition in the FMCG market makes it interesting to explore how tactile qualities can be used to draw attention and communicate product qualities towards customers. Also, tactile qualities may help creating differentiation, brand identity and recognition. However, the influence of tactile qualities in the shop is limited, since customers use only few seconds to decide what to purchase. The biggest potential of tactile qualities seems to be during use. When the customer uses and interacts with the product, tactile qualities may contribute to improve usability and increase perceived quality. Using tactile qualities of materials to add value is most relevant when targeting customers with a certain level of involvement in the product. Finally, tactile qualities of materials can generate a specific emotional experience, particularly during use. Applying a particular texture or adding a tactile detail may be more appropriate than using an unconventional material for the product category, as the latter provides fewer opportunities with respect to attention and communication of product qualities. But with respect to emotional experiences of materials, there is a general problem of context dependency. Emotional experiences of particular materials depend on the setting and content for which they are used. So, for each product or product category, companies need to detect the material signal towards the particular target group.

| | Attention: differentiation, brand identity, persuasion | Communication of product values: perceived quality, information about sensory experience, emotional experience, usability | Risk |
|----------------------------------|---|---|---|
| <p>Change material</p> | <ul style="list-style-type: none"> • Can contribute to differentiation and instant recognition when exploring the options available within packaging materials, creating “experimental packaging” [10] • May contribute to creating brand identity. The element can be emphasised in all marketing channels. | <ul style="list-style-type: none"> • May contribute to maintain high perceived quality throughout the product’s lifetime. <i>This may be most relevant for products which the user is in close contact with, and products which communicate high quality.</i> • May be done when communicating sustainability, using materials which are perceived as environmentally friendly • Improves usability, thus increasing customer value [7]. | <ul style="list-style-type: none"> • Often little relevant, due to packaging requirements and involved costs. • Category cues must still be provided [17]. Becoming too different is a risky strategy. • User feedback is required for companies to understand the emotional experience of a new material, due to the problem of context dependency. |
| <p>Add tactile detail</p> | <ul style="list-style-type: none"> • Can be used for recognition and contribute to create brand identity. The element can be emphasised in all marketing channels. <i>Relevant for people who prefer sensory information over verbal [13].</i> • May be appealing and draw attention [13]. <i>This is relevant when targeting people who enjoy exploring products through touch [13].</i> | <ul style="list-style-type: none"> • Can be used to “trading up” (imitate more expensive variants). <i>This may be most relevant for products where competition is strong and there is little difference in actual quality.</i> • Can be used to increase chance of persuasion when target group have a need for touch and enjoy exploring products. Positive sensory feedback is then required [13]. • May improve usability by providing cues to how the products should e.g. be opened. • Braille writing as a tactile detail may convey information to blind people | <ul style="list-style-type: none"> • May result in customer disappointment if there may be mismatch between customers’ perception through vision and later perception through touch. • Unpleasant sensory feedback should be avoided as people with little interest in touch may reject the product [13]. • The validity of the study on tactile elements for persuasion is limited. |
| <p>Change texture</p> | <ul style="list-style-type: none"> • Can be a subtle way to differentiate, and category cues are still provided. • May contribute to creating brand identity. The element can be emphasised in all marketing channels (360 degrees marketing). | <ul style="list-style-type: none"> • May contribute to adding value [10] <i>Relevant for product categories with strong competition. Also for products suffering from being perceived as inferior, though being equal or superior to competitors.</i> • May provide information about the sensory experience of the content to increase chance of customer satisfaction and repurchase. <i>May be most relevant for food products.</i> • May add value through emphasising the unpacking experience [20]. <i>Relevant in products where customers are involved to some extent (high quality food products and intimate hygiene products).</i> • Improves usability, thus increasing customer value [7]. | <ul style="list-style-type: none"> • Customers may not notice the difference, because it is too subtle. • May be expensive. |

It was found that little research was done on tactile qualities of packaging materials. The review suggests a number of areas as particularly interesting for further research, such as how materials influence brand identity, how sensory attributes can be communicated towards the target group through tactile elements and material surfaces, and how material surfaces affect persuasion.

Finally, suggestions were made for using tactile qualities of materials as part of the strategic design process. Exploring the potential of touch through further research may provide marketers and packaging designers with new opportunities in terms of drawing attention and communicating product qualities towards consumers, which could imply increased sales and higher market shares.

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