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Cultural Product Design Matrix

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Table of Contents

List of Figures

List of Abbreviations

CPD	Cultural Product Design
CPDM	Cultural Product Design Matrix
PD	Product Design

1. Introduction

Globalization in the business world means that international trade is booming on an unprecedented scale. For many companies that means the internationalization of their businesses and the expansion into foreign markets. These processes of internationalization and market expansion are usually seen as business opportunities that can reduce production costs and reach new customers, thus contributing to the companies' success and profit. However, the introduction of products into a new market requires adequate preparation, since products need to be adapted to these new markets in order to attract the local customers. Kacen, Hess and Walker (2012, pp. 578 - 584) argue that a culturally adequate product design is a major factor that influences customers in their decision to buy a product.

Purchasing decisions are influenced by a variety of factors, such as suitable pricing, packaging and evidently the product itself in its color, form, shape and size. As part of the 4Ps of marketing (product, place, price, and promotion), product development and design has a strong impact on a customer's perception of a product and its qualities. The physical product features as well as its packaging often differ in response to local market needs and customs. Thus, many globally active companies emphasize the idea of adapting their products to local preferences rather than offering global, invariable and standardized goods, since customers "reject the homogenized product design and performance of standardized global products" (Bartlett and Beamish, 2014, p. 110). What is important for companies, however, is an adequate adaption to a new market. This adaption must also take place with regards to differences between the cultural origin of the product and the cultural traditions, norms and values of the target market. Such a successful adaption can take place in a process that is called Cultural Product Design (CPD).

CPD is important in an ethnic marketing-strategies context because "creating and communicating products and brands for different consumer cultures entails a bidirectional relationship, wherein individual culture-specific needs influence the emergence of cultural meaning, and the communication of these meanings by marketers in turn influ-

ences the social reality of individuals both within and across cultural contexts" (Chattaraman, Rudd and Lennon, 2009, p. 832). The speed with which purchasing decisions are often made does not allow for culture-induced barriers in product assessment by the prospective customer (Oliva, 2005, p. 251). Thus, the creation of products that are perfectly adapted to the cultural environment of the local market is a big challenge for internationally active companies.

This article addresses the issue and asks how companies can adapt successfully to culturally different markets in the design of their product. The focus is on the physical product characteristics such as color, size, flavor, and form that vary across cultures and where the culturally different preferences for and meanings of these features are an important factor in marketing and sales of the products. After a general introduction about the influence of culture on production design, the article presents the Cultural Product Design Matrix that serves to guide the product development process in a way that avoids cultural blunders and leads to the creation of products that are culturally adequate in foreign markets. This matrix is then applied to several case studies from the consumer goods industry, in particular the beauty and home care sector, to test its usability as an instrument that can help producers to hedge against culture-related problems in the conception and launch of their products in new markets.

2. Culture and International Business

Cultural differences are an important challenge for companies operating internationally. In order to succeed and generate profits abroad, companies have to integrate different traditions, norms and values into their business strategies that target foreign markets. Understanding cultural differences is thus a factor for gaining a competitive advantage over rivaling firms. Accordingly, Sangkil et al. (2016, p. 79) emphasize how important it is to also focus on country-specific economic developments as well as on cultural characteristics in order to ensure product success in foreign markets.
Since the 1980s there has been a steep rise in interest in how culture affects international business interactions. However, the majority of the models and tools developed to deal with cross-cultural challenges concentrates on human interaction in the workplace. When applying these models of culture to the cultural aspects of product design, caution has to be exercised in operationalizing cross-culture measurement tools.
To highlight the importance of culture in international business, this chapter describes the term culture as understood in this paper and its layers as well as cultural blunders in international marketing. In addition, Cultural Product Design (CPD) is defined and its elements are described.

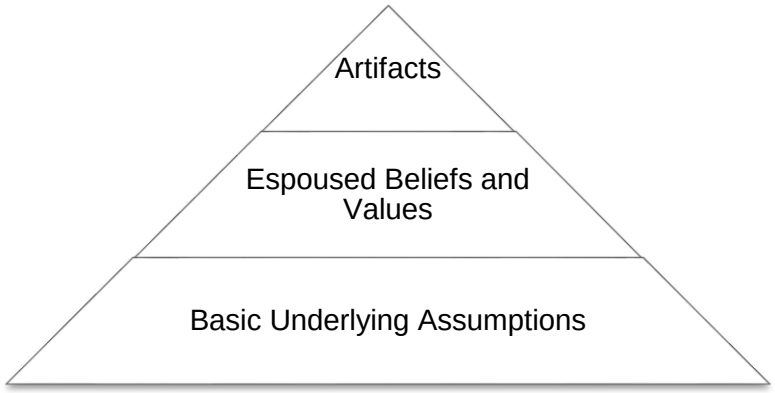
2.1. Culture and its Layers

The term culture as such is usually defined as something that all humans learn and use for successful interaction in their social group. It consists of attitudes, norms, values and ways of thinking that inform behavioral choices (Browaeys and Price, 2008, p.3). The most prolific definition of culture stems from Geert Hofstede who calls it “the collective programming of the mind that distinguishes the members of one group or category of people from another” (Hofstede, Hofstede and Minkov 2010, p.6).
A common feature of all models developed to describe and analyze cultural differences is a distinction between the visible and the invisible parts of culture. Hofstede conceptualized this distinction in the metaphor of culture as an onion where the visible outer layers are symbols and cultural practices (Hofstede, Hofstede and Minkov 2010, p. 7ff.). The other metaphor commonly used to visualize the interconnection of visible

and invisible elements of culture stems from Edward Hall. In his book *Beyond Culture* (1976) he depicted culture as an iceberg whose visible elements above the water surface are the conscious parts of culture like behavior and formulated beliefs. The invisible part below the surface in this model are the unconscious parts of culture like value systems and though patterns that as the biggest part of the iceberg support and define the nature of the visible part about the surface, i.e. the display of culture.

Edgar Schein refined the iceberg model and applied it to his study of organizational culture (see fig. 1). He divided organizational culture in three levels which are artifacts, espoused values and beliefs, and basic underlying assumptions (Schein, 2010, p. 23).

Figure 1: Three Levels of Organizational Culture



Source: Schein (2010)

In this model the term artifacts, at the top of the pyramid, is used for phenomena that are visible, audible and sensible. Thus, this level includes the behavior displayed in the workplace, language use, and display of emotions but also the visible and tangible structures and processes as well as the rituals that are a part of everyday life in organizations. While this layer can be easily observed, it is at the same time difficult to decipher, because although it is easy to observe people's actions, it might be difficult to understand their meaning. Espoused beliefs and values, at the second level of the pyramid, are the consciously formulated and published beliefs and values that guide the actions of an organization. Since they are usually laid down in writing and discussed in the corporate context, they can also often be observed and subjected to interpretation. The lowest level of the model, the basic underlying assumption, comprises the unconscious and taken-for-granted beliefs and values. They consist of the actors' culturally learned understanding of the proper relationship between humans,

between humans and their environment, the proper usage of time and space, the definition of truth and reality etc. As these concepts are usually not consciously discussed in a corporate setting, they remain invisible to the observer, however, since they eventually inform the formulation of the espoused beliefs and values of an organization that in turn set the frame for the production of the “artifacts” of organizational culture and thus help to explain them, they are in fact the most important ingredients of that culture (Schein, 2010, p. 23-24).

This model can be adapted to the challenge of CPD in so far as products are first and foremost the result of a development that takes place within a corporate context and are thus subject to the organizational culture of the producer. As “artifacts” they are designed to transport the espoused beliefs and values of the producing company and are as such closely connected to the underlying assumptions on which the company values, visions mission, and goals are based. When, however, the underlying assumption that cultural differences matter is lacking and thus the need for a cultural adaption process in product development is not included in the espoused values of a company, the resulting product might evoke unwanted reactions in a context that is culturally different from its context of conception. The resulting mistakes are often colloquially called cultural blunders.

2.2. Cultural Blunders in International Marketing

Many companies which pride themselves in their espoused values to think global and act local, i.e. strive for international business activities that are at the same time taking local conditions into consideration, but base their activities on rather ethnocentric unconscious assumptions, experience all kinds of failures in the manufacturing and marketing of their products outside their culture of origin. Their cultural blunders are often cross-cultural mistakes that result from poor cultural awareness (Costa, 2010, p. 20). According to Ricks (2006, p. 3) “Cultural differences are the most significant and troublesome variables encountered by the multinational company”.

Menzies (2016, p. 20) elaborates that “cultural blind spots occur when we fail to attribute differences in our behaviors and mental processes to different cultural schemas –

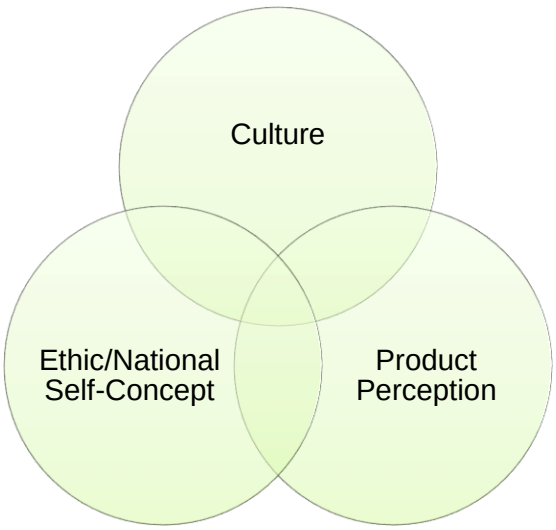
attempting to understand and predict the thoughts and behaviors of members of another cultural group in terms of assumptions, values and beliefs of our own cultural schema. Cultural blind spots lead to misunderstandings and misattributions, and frustration, conflict or helplessness". Managers' and designers' lack of cultural knowledge has a strong effect on a brand's image, company representation and customer satisfaction. "Managing the cultural dimension is a major challenge for global companies, given the diminishing amount of time available to experience and acquire knowledge" (Albescu, Punga and Paraschiv, 2009, p. 40); consequently, designing products with culturally unsuitable characteristics may repel or even offend customers of certain cultures. Cultural marketing faux-pas have the same effect as mistakes in production. To avoid cultural blunders, it is thus important to include cultural information and knowledge as valuable factors since this contributes to the company goals of increasing quality standards, achieving substantial savings, making significant improvements, and using the available resources for a competitive advantage (Albescu, Pugna and Paraschiv, 2009, p. 42). Although global companies often focus on standardization rather than on adaptation to local markets, van Heerden and Barter (2008, p. 38) argue that attention to differences in cultural values in marketing makes the respective campaigns more persuasive than standard ones. It is thus often recommended that companies involve different departments in the product development and marketing process so that strong and culturally aware teams also take into consideration the cultural differences in the process called Cultural Product Design or CPD for short (Engelen and Brettel, 2011, p. 79; Armstrong and Kotler, 2015, p. 127; Jones, 2013, p. 123).

2.3. Cultural Product Design

Since product design is an important success factor for a company's sales and profit, striving for the best possible adaption to the target culture for the product is essential to achieve a competitive advantage. This is done through an effective CPD, which changes the initial product to meet local requirements, conditions and wants (Armstrong and Kotler, 2015, p. 514). Moalosi, Popovic and Hickling-Hudson (2007, p. 4) created a frame of cultural beliefs and social practices leading the way on how to relate

to a product, Sangkil et al. (2016, p. 78) in their discussion of how multinational companies can raise "their cultural intelligence in understanding local consumers' preferences to develop their PD [Product Development], launch and promotion strategies" suggest that "subtle cultural nuances are better examined when considering cultural products – that is, products with embedded cultural content that serves as a strong and relevant factor for consumers' purchase decisions". Jakubanecs and Supphellen (2016, p. 302) state that cultural embeddedness forecasts customer behavior and attitudes toward products, which helps companies to create the most suitable design adaptations. The tendency to see customers as users in relation to the symbolic meaning of products conceptualizes the act of consumption more and more as giving the consumers the possibility to express their identity and self-concepts (Jakubanecs and Supphellen, 2016, pp.305-306; Liu, Volčič and Gallois, 2010, p. 87). For CPD, it is thus important to understand the cultural embeddedness of products in a matrix – visualized in the following illustration (fig. 2) – that consists of the three domains of culture, ethical and national self-concepts, and production perception. The perfect product is located in the area of the matrix where the three domains overlap, because the product as such is perceived to be useful, attractive etc. and at the same time it complies with the cultural values of the costumers and caters to their self-concept.

Figure 2: Conceptual Model of the Cultural Embeddedness of Products



Source: Jukubanecs and Supphellen (2016)

A good product concept takes this relation between culture, the product, and the consumer into consideration and adapts also the physical features of the product to possible value differences between the conceptualizing culture and the target market. The adoption and adaptation of products depend on how consumers react to it based on their norms and values (Herbig, 1998, p. 90). Crilly, Moultrie and Clarkson (2004, p. 19) name as the three categories to be considered in this physical adaption process the aesthetic impressions, the semantic interpretation and the symbolic association.

2.4. Cultural Elements for Cross-Cultural Product Design

Catering to cultural differences and the need for further diversification is a challenge for product designers. It can be overcome by considering various aspects of culture in the design process, such as religion, spirituality, language, economic systems, family and community, foods, arts, government, and sports (Menzies, 2016, p. 70; Liu, Volčič and Gallois, 2010, p. 56). While some of these aspects like language can be accommodated easier in the design process, it is more difficult to consider social norms that regulate living together in families and communities, since these activities are governed by principles, that are culturally learned and part of the rather invisible unconscious part of the cultural iceberg. It is, however, often these invisible elements of culture that create the cultural distance for persons or companies from a different culture (Bartlett and Beamish, 2014, pp. 82-85; Zamzuri and Lundberg, 2017, p. 8). Menzies (2016, p. 73) thus argues that “understanding the values, assumptions and beliefs of a cultural group is critical for bridging cultural differences and for establishing productive and harmonious relationships with diverse others.” Deresky (2008, p. 96) also outlines the importance of factors like the economic system, the political framework, and religious notions that all influence the value systems of the cultural groups that live within these frameworks. Thus designers must consider a broad variety of cultural aspects, and have to be sensitive and responsive to them in order to successfully cope with the pressure of successful localization (Bartlett and Beamish, 2014, pp.106-110). In response to this challenge, Rubin developed a framework for cross-cultural product design that consists of eight cultural elements (see fig. 3). As also suggested by Lin et

al (2007, p. 149) it is a tool to assess the overall environment into which the product is to be placed.

Figure 3: Eight Cultural Elements for Cross-Cultural Product Design

Demographics	The categorization of a population based on statistical data of age income, education, sex, location etc.
Lifestyle	The delineation of groups by shared habits, interests and activities.
Setting	The location; climate; environmental condition; and social, political and economic state of the culture.
Artifacts	All other products familiar to the culture
Trends	The current state of [popular] culture in music, art, architecture, entertainment and fashion
Influences	The external forces that manipulate the cultural trends and consumer tastes.
Traditions	The iconic people, events, symbols and objects that established, and continue to resonate within, the culture.
Perceptions	The intrinsic attitude, awareness expectations and standards shared by the culture

Source: Rubin (2012, p. 43)

3. Cultural Product Design Matrix

When analyzing the impact of culture on the perception of products we need two separate sets of evaluation criteria. First, we need product characteristics describing the main properties or qualities of a product. As these characteristics simultaneously serve as the parameters or variables to adapt the product to the tastes and needs of other cultures, they can also be understood as the product design mediums. Here we reference the classification of product design mediums according to Koppelmann (1997, p. 322 ff.). Second, we need a set of parameters describing how a potential customer or user perceives the product against his/her cultural background. Here we refer to the model of product language as proposed by the “Offenbacher Ansatz” (Offenbach Theory of Product Language) as described by Steffen (1997, 2000, 2007). As a part of semiotics, i.e. the theory of signs, this model includes syntactic as well as symbolic product language functions. We combine these two sets of criteria to form our Cultural Product Design Matrix.

3.1. Product Characteristics

Product characteristics can be defined as “established respectively generally accepted properties of items (in this case: products)” (Schubert, Heller and Feldhusen 2012, p. 428, own translation). A requirement is that product characteristics should be universal and apply to all respective products. Therefore, they should include all attributes and conveniences that a customer is willing to pay for (Miracle, 1965, p. 19). Product characteristics play an important role in the success or failure of a company (Brown and Potoski, 2005, p. 327; McGuinness and Little, 1981, p. 111). Consequently, product characteristics have a strong impact on value creation for both the customer and the seller (Kim, Roberts and Brown, 2016, p. 788). Price, features and subjective characteristics, such as power and comfort of the product, enrich the product’s overall attractiveness (Luo, Kannan and Ratchford, 2008, p. 182). Therefore, suitable product characteristics must be chosen to fulfill customer’s preferences and influence his/her purchase decisions (Bloch, 1995, p. 18).

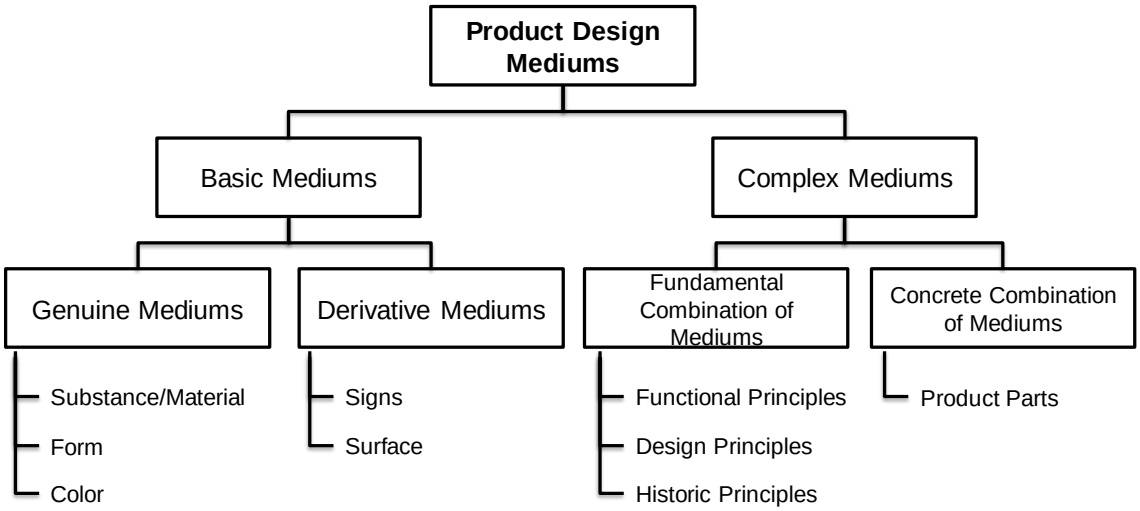
In this sense, product characteristics can also be understood as product design mediums. Product design mediums are the means a designer can use to design a new product or to adapt an existing one to different tastes and needs. With regard to these mediums some authors give a list of examples but fail to provide a classification: E.g. Miracle (1965, p. 21) lists form, color, size, flavor, quality and durability, and Chiu (1987), as cited in Huang-Ning et al. (2013, p. 65), names product characteristics such as form, color, material, flavor and size.

Based on an extensive literature review Koppelmann (1997, p. 323 ff.) developed a classification of product design mediums. This classification distinguishes according to the simplicity of the characteristics between basic and complex mediums (see fig. 4). Basic mediums contain genuine mediums and derivative mediums. Genuine mediums such as substance, form and color of a product are elementary and cannot be decomposed any further, while derivative mediums such as signs and surface already include certain weak composite aspects. Complex mediums are combinations of scientific or technical principles and can be divided into fundamental combinations of mediums and concrete combinations of mediums. The fundamental combinations include the following three components:

- Functional principles describe the dynamic relations of product components, mainly physical relations.
- Design principles describe the static relations of product components and include the number and spatial arrangements of these components.
- Historic principles are well-known solutions from the past.

Concrete combinations are tangible product parts of different complexity which the designer needs to consider for a product, e.g. standard components of suppliers.

Figure 4: Product Design Mediums



Source: Koppelmann (1997, p. 323, own translation)

The choice of color highly influences the customer's perception of a product, since contrasting combinations and variations of color evoke different emotional reactions from customers (Cheskin, 1947, p. 13), and color affects the beliefs regarding the purchase of the product (Middlestandt, 1990, p. 248). Additionally, color is the first characteristic customers look for when identifying themselves with the product. Color is described by hue, chroma and lightness. Hue refers to the recognition of the color, chroma relates to the vividness or the amount of hue, and lightness describes whether a color is light or dark (The Concept of Color, 2017, p. 30).

According to Bloch (1995, p. 16), form is the entirety of the different product elements perceived as a whole. It is relevant for the first impression and inference of further product characteristics. Townsend, Montoya and Calantone (2011, p. 376) describe form as "structural characteristics that provide the architecture through which functional product features are delivered". Although form is described as a genuine medium by Koppelmann (1997, p. 323), this definition shows that form comprises at least two different aspects of shape and size. Size can vary independently of shape – small-sized, medium-sized and large-sized offerings – and is adapted to customer needs due to the different demand elasticities that cover multiple product sizes of the same product (Shreay, Chouinard and McCluskey, 2016, p. 4). Size and material can also be related to weight (Koppelmann 1997, p. 312).

Substance respectively material should also reflect customer preferences because it positively strengthens the visual and emotional appearance of the product (Witte, 2013, p. 8). Signs can serve as affordances or as signifiers affecting the customer's perception of the functionality of a product (Norman, 2013, p. 10 ff.), but can also have symbolic meanings (Koppelmann, 1997, p. 324). Surface aspects can be treated separately insofar as it goes beyond aspects of substance, form and color (Koppelmann, 1997, p. 325).

Unfortunately, Koppelmann (1997) makes no reference with regard to the applicability or limitations of his categorization, but from the context it becomes obvious that it is mainly applicable for visual aspects of design. So depending on the product under design different sensory aspects might become relevant such as flavor, scent, sound or haptic respectively tactile sensations. E.g. Tristano (2012, p. 93) examines the various flavor preferences of consumers.

For our purposes, we need the basic product design mediums, as they are also perceived by the potential customer. The distinction into genuine and derivative, however, is rather unimportant for our task. From the complex mediums we just need the fundamental combinations which are related to product functionality and product quality, i.e. functional and design principles. Historic principles and concrete combinations of mediums (product parts) can be derived from the two other principles (Koppelmann, 1997, p. 326).

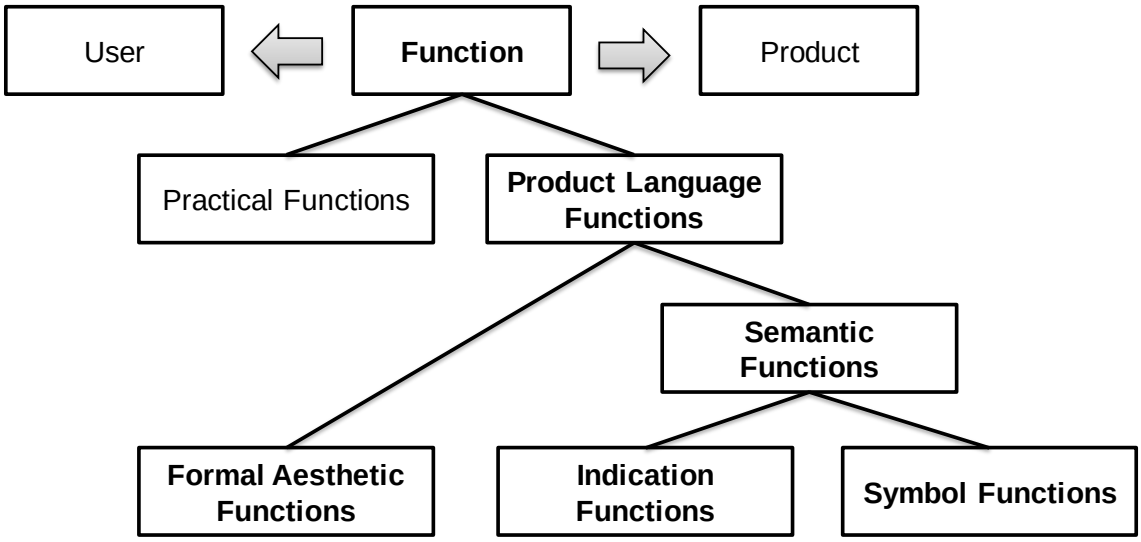
3.2. Product Language and Product Language Functions

The theory of product language is based on the theoretical work of Gros (1983) at the University of Offenbach in Germany. The main idea of product language is that a product can be understood as a communication device sending signs to users. In a figurative sense the product "speaks" or "communicates" to the user. As such, product language is based on semiotics, i.e. the theory of signs, and hermeneutics, i.e. the theory of understanding. So, product language is predominantly concerned with syntactic and semantic product functions which are transmitted by sensory perception and have a psychological impact on the user. The interpretation of these signs is dependent on the social and cultural context of the user (Steffen 2000, p. 22 ff.).

The Offenbach Theory of Product Language makes a distinction between the practical functions of a product and product language functions. The practical functions represent the purpose of the product (e.g. a chair for sitting), while product language functions deal with “formal and communicative aspects of a product” (Steffen 2007, p. 2). Practical functions are not relevant in our case as we are only interested in what happens if a company transfers a product from its home cultural sphere to a foreign one. It is assumed for the sake of simplicity that companies are able to design practical functions, as they have already done so more or less successfully in their own cultural sphere.

As a part of semiotics, i.e. the theory of signs, the Offenbach Theory of Product Language includes syntactic as well as semantic aspects. The formal aesthetic functions represent the syntax or grammar of the design, while indication and symbol functions contain semantic aspects, and are, thus, combined in the category of semantic functions (see fig. 5). Crilly, Moultrie and Clarkson (2004) developed a similar model for the cognitive response of consumers to products based on extensive literature research, but without any reference to the Offenbach model. Nevertheless, their model offers a similar solution by dividing the responses into aesthetic impression, semantic interpretation and symbolic association. Aesthetic impression corresponds to the formal aesthetic functions of the Offenbach school (Steffen 2000, p. 34 ff.). Unlike the Offenbach Theory of Product Language, however, Crilly, Moultrie and Clarkson (2004) do not subsume symbolic meaning under the semantic functions. They understand semantics mainly as an indication function and keep symbolic association as a separate item. But apart from this difference in classification the two models are remarkably similar and the three product language functions on the lowest level of the model (see fig. 5) have a significant overlap to the three responses of Crilly, Moultrie and Clarkson (2004).

Figure 5: Product Language Functions

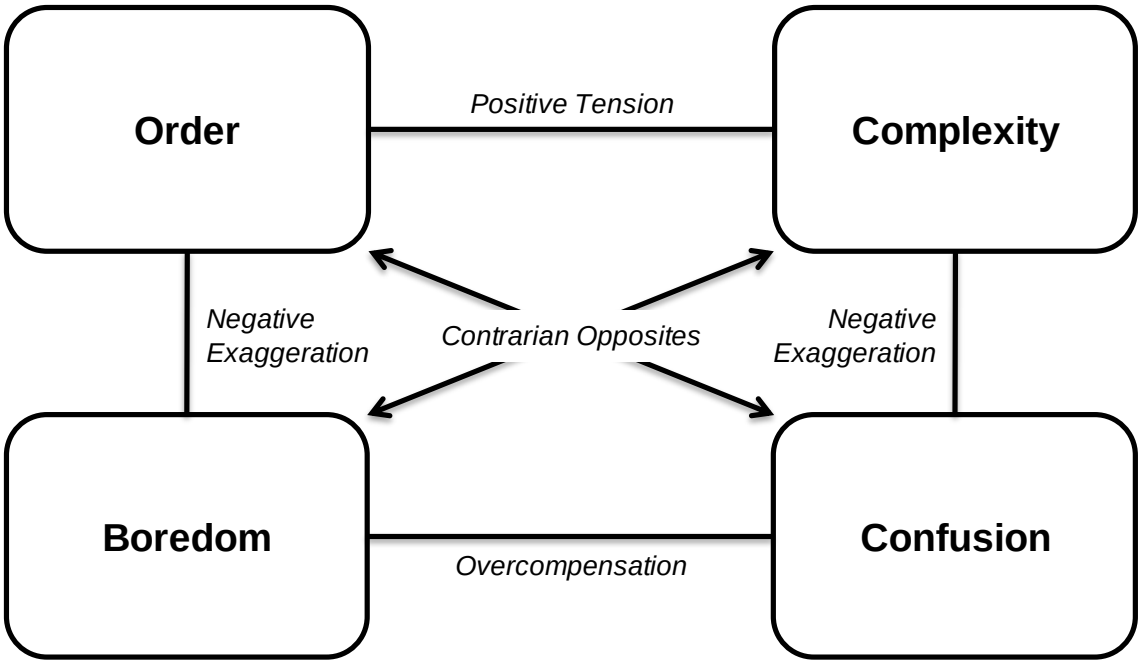


Source: Steffen (2007, p. 2)

With regard to aesthetic functions products are treated as a gestalt, i.e. their structure and shape, without regard to the meaning as a sign or a symbol. The design of formal aesthetic functions takes place in the tension between the two antagonistic principles of order and complexity (Steffen 2000, p. 34).

The antagonistic principles of aesthetics can be displayed in the form of a Value Square ("Wertequadrat"). The main idea of the value square as described by Schulz von Thun (1998) is that each positive value has a complementing countervalue as a positive dialectical opposite. In this case (see fig. 6) order and complexity complement each other to achieve a balance. The negative exaggeration of order would result in boredom, while the negative exaggeration of complexity would lead to confusion. Or in the words of Steffen (2007, p. 3): "Complexity without order produces confusion; order without complexity produces boredom". Steffen (2000, p. 94) identifies 11 principles of order and complexity such as simple/manifold, closed/open, symmetrical/asymmetrical.

Figure 6: Antagonistic Principles of Formal Aesthetic Functions



Source: own illustration based on Steffen (2007, p. 3)

Crilly, Moultrie and Clarkson (2004, p. 6) define aesthetic impression as "the sensation that results from the perception of attractiveness (or unattractiveness) in products". With this definition they deviate from the Offenbach Theory of Product Language. Their definition is more emotionally charged and evaluative, as it relates to the philosophical question of beauty, while the definition of Steffen (2000) is more descriptive and relates to the rules of gestalt theory.

The semantic functions relate to the theory of product semantics. Product semantics can be defined as "the study of the symbolic qualities of man-made forms in the context of their use and the application of this knowledge to industrial design" (Krippendorff & Butter 1984, p. 4) and can be seen as a key principle of successful industrial design (Krippendorf 2006). It has drawn attention to the idea that "the success of a design would be directly related to people's understanding of the meanings in products" (Gomes des Medeiros 2014, p. 17). Semantic functions of the Offenbach Theory of Product Language are divided into indication functions and symbolic functions (Steffen 2000, p. 94).

Indication Functions serve two purposes: First, they “enable the nature of the product or the product category to be identified” (Steffen 2007, p. 3). This means that the consumer is able to identify the product for what it is. This is especially important if unfamiliar design elements are used in the design of the product, e.g. in metaphorical product design (Koppelmann and Oerkermann 2007). Second, the indication functions “visualize and explain the various practical functions of a product and how it should be used” (Steffen 2007, p. 3). In a similar fashion Crilly, Moultrie and Clarkson (2004, p. 6) define semantic interpretation of their concept as “what a product is seen to say about its function, mode-of-use and qualities”.

According to Krippendorff and Butter (1984, p. 6) form, shape and texture of a product influence the product use, apart from information displays, graphic elements and markers and indications of the product’s internal state. Neglects in these indicating aspects of product design can lead to problems in identifying a product as belonging to a certain product family and having certain functionalities, the inability to use these functionalities if identified and the prevention of exploration of further product functionality. According to Norman (2013, p. 10 ff.) fundamental principles of design incorporate affordances, signifiers, mappings and constraints. Affordances enable the desired actions and uses, while signifiers give feedback about achieved results and enable discoverability of new possible uses. Mappings show the relationship of controls and actions and enable adequate use of a product, while constraints limit the possible actions of users to the useful ones.

The symbol functions of the Offenbach Theory of Product Language “refer to conceptions and associations that come to a person’s mind while contemplating an object” (Steffen 2007, p. 4). In the conceptual model of the Offenbach approach the following three different elements are distinguished: period style (e.g. baroque, futurism), partial style (e.g. national style, corporate style) and associations (e.g. old/young, cold/warm) (Steffen 2000, p. 95). In this regard, the Offenbach approach goes beyond the model of Crilly, Moultrie and Clarkson (2004, p. 6) who define symbolic association as the “perception of what a product says about its owner or user: the personal and social significance attached to the design”.

The different functions are not independent, but work interdependently. According to Steffen (2000, p. 80 ff.) especially the indication function has interactions with the other

functions. Some products are not only seen as tools but also as accessories and, thus, serve as status symbols. So indication functions or their absence can also serve symbolic functions. Additionally, indications affect the aesthetic perception of a product, as they usually increase the complexity of a product, but are sometimes perceived as ornaments.

Crilly, Moultrie and Clarkson (2004, p. 18) propose the following interactions between responses:

- Aesthetic-semantic interaction: The attractiveness of a product is influenced by the identification of the products and its features.
- Semantic-symbolic interaction: The perceived qualities of a product can be transferred as symbolic value to the user.
- Symbolic-aesthetic interaction: The attractiveness of a product is affected by the symbolic value of the group the user belongs to.

3.3. Cultural Product Design Matrix (CPDM)

The two separate sets of evaluation criteria – product characteristics and product language functions – can be combined to form a Cultural Product Design Matrix (see fig. 7). With this tool, we can analyze the impacts of product design mediums on the product language functions when a company transfers a product from one cultural sphere – usually the home sphere – to a different cultural sphere.

Figure 7: Cultural Product Design Matrix (CPDM)

		Product Language Functions		
		Aesthetic Functions	Indication Functions	Symbol Functions
Product Characteristics	Color			
	Size / Weight			
	Shape			
	Material			
	Signs			
	Surface			
	Other Sensory Aspects (Flavor, Scent, Sound, Haptics)			
	Features (Dynamic Relations)			
	Quality (Static Relations)			

Source: own illustration

For the axis of the product language, we choose the three functions as described by the Offenbach Theory of Product Language – with one deviation: We understand aesthetics not only as formal aesthetic functions within the tension of order and complexity as described by Steffen (2000). We also include the view of Crilly, Moultrie and Clarkson (2004, p. 6) that aesthetic impression comprises the “perception of attractiveness (or unattractiveness) in products” in our understanding of aesthetic functions. Different cultures have different aesthetic preferences as expressed in the rules of “good taste” of the respective country (Hahn, 2014, p. 26, Czinkota, Ronkainen and Zvobgo, 2011, p. 60).

For the axis of product characteristics we are guided by the classification of product design mediums according to Koppelmann (1997, p. 322 ff.). We include all the basic mediums and complement them where necessary. Learned color preferences influence the aesthetic perception of a product and have different symbolic associations in different cultures. The same color can, thus, evoke different emotions in different cultures (Aslam, 2006, p. 19, de Mooij, 2011, p. 231, Dresser, 2005, p. 63, Madden,

Hewett and Roth, 2000, p. 92). Cultures can also assign different meanings to contrast, brightness, lightness/darkness and the relation between foreground and background (de Mooij, 2011, p. 233, Madden, Hewett and Roth, 2000, p. 91, Semin and Plama, 2014 as cited in Hagtvedt and Brasel, 2016, p. 552). Moreover different cultures can have different semantic meanings of colors e.g. with regard to danger and safety (Chan and Courtney, 2001, p. 39, Zamzuri and Lundberg, 2017, p. 6) or with regard to increase and decrease of a variable (Jiang et al., 2014, p. 226).

We divide the product medium form into the shape of the product as well as size and weight of the product, because size and weight can have a distinct impact from shape on the perception by people from different cultures (see e.g. Peoples and Bailey, 2009, p. 340, Proctor et al., 2011, p. 161). The shape of a product can evoke associations to culture-specific objects and their meaning (Lin et al., 2007, Peoples and Bailey, 2009, p. 340). Size and weight can be a culture-specific indication for a product's qualities (Proctor et al., 2011, p.161). Similar relations can be observed for specific materials and/or surfaces of products (Lin et al., 2007, Peoples and Bailey, 2009, p. 340). Signs can be used to show affordances or as signifiers, but can be misinterpreted in different cultures (Norman, 2013, p. 10 ff.). Furthermore signs can have symbolic meanings (Koppelmann, 1997, p. 324) which can vary in different cultures.

The combination of color, form, material, signs and surfaces can reflect a partial style and, thus, lead to conflict with national or religious symbols. National symbols are usually highly valued, and are often related to norms and traditions. E.g. a national flag stands for loyalty and grace (Hebdige, 2007, p. 434). Religion can assign a meaning to certain symbols, e.g. the Crucifix, the Star of David or the Islamic crescent (Hilal), which can evoke strong emotional responses in religious people (Dresser, 2005, p. 52).

Additionally to the visual aspects of a product, we also include further sensory aspects such as flavor, scent, sound or haptics in the matrix. Visual appearance is a very important aspect of the product's perception, but other sensory characteristics can also have an important impact on the perception of a product, e.g. scent or smell (Liu, Volčič and Gallois, 2010, p. 189).

From the complex mediums, we include functional and design principles in our matrix. We choose different names for these product design mediums to avoid confusion with

the product language functions. We call functional principles respectively the dynamic relations of components “features”. By this term, we mean the motions of a product which constitute the affordances enabling the desired actions and uses. Additionally we include the behaviors of the product while performing its functionalities. This behavior can serve as a feedback to the customer and, thus, have an impact especially on semantic interpretation of the product in the form of signifiers. For the design principles respectively the static relations of components, we include the term “quality” in our matrix. By this term, we do not mean quality as defined by the American Society for Quality (2018), which is related to the ability to fulfill customer needs since this definition would have an overlap to the practical and indication functions. Instead, we mean the technical quality of a product as expressed in its adherence to specifications. This quality leads to users’ perceptions of durability of the product and reliability of the promised functionality.

We leave out other aspects of design principles, as they would overlap with all three product language functions, especially the formal aesthetic functions. Features and quality can have different semantic interpretations in different cultures. Examples are the direction of light switches, key turns and doors as well the reading direction of quadrant labels (Chan and Courtney, 2001). We choose not to include historic principles as they strongly overlap with the interpretation of meaning in a respective culture, especially the symbol functions. We also choose to not include concrete combinations of mediums as we feel that they are mainly relevant for the designer, but less so for the perception of the actual user.

4. Methodology and Case Selection

As we are still in the exploratory phase of our research endeavors, we choose a qualitative research approach. Qualitative research methods focus on the reproduction of meaning, proceed empirically and systematically, and can be adapted flexibly to the research topic (Hussy, Schreier and Echterhoff, 2013, p. 186). The main aim of the research is to investigate the validity of our Cultural Product Design Matrix, and to test its usability. In this context, the qualitative approach has certain advantages over the quantitative approach, as it is open, inductive and flexibly adaptable. Its main aim is

the description of difficult-to-explain data in need of interpretation, not so much the causal analysis of numerical data. Its orientation is on single instances or cases instead of single variables (Hussy, Schreier and Echterhoff, 2013, p. 190). The qualitative research approach addresses open research questions using a limited set of instances. This enables an in-depth analysis of the cases with the aim of a detailed description of the research object and possibly theory formation (Döring and Bortz, 2016, p. 184).

Our qualitative research method is a case study with multiple cases. Case studies holistically investigate individual cases under consideration of context and multiple data sources (Hussy, Schreier and Echterhoff, 2013, p. 199). We use our newly developed Cultural Product Design Matrix to describe cases in which companies have tried to transfer a product from one cultural sphere to another one, and explain their failure or success. As such, our case study is descriptive as well as explanatory.

The data analysis is based on secondary data, i.e. “data that have been interpreted and recorded” (Walliman, 2011, p. 70) in existing documents such as articles or books. We use qualitative document analysis, more specifically content analysis, to establish the reasons for successful or unsuccessful adaption of product design. This approach is exploratory and can lead to theory formation (Döring and Bortz, 2016, p. 540). Existing documents from the press and the literature are qualitatively interpreted, while the CPDM is used as a guiding framework for the interpretation of the content of the documents.

For the choice of the industry from which to draw the cases we turned to the economic categorization of products. Products can be divided into durables and consumables and into industrial goods and consumer goods (see fig. 8). Durables are used several times, while consumables are usually annihilated during use. Industrial goods are goods bought by companies (B2B: Business-to-Business), while consumer goods are bought by individuals respectively households (B2C: Business-to-Consumer). The focus of our research is on B2C-consumables, i.e. non-durable and convenience goods or fast moving consumer goods (FMCG), because this segment covers products that are used almost daily and get in contact with a lot of people as compared to industrial goods. Since the consumer goods industry contains a wide field of different products with incomparable product characteristics, we further focus on a subset of the industry.

We choose the home and beauty care segment, since it offers a few interesting cases of cultural blunders, which were covered by the press.

Figure 8: Categorization of Goods

	Industrial Goods (B2B Products)	**Consumer Goods (B2C Products)**
Durables	Investment Goods	Consumer Durables
Consumables	Preliminary Materials	Non-Durable & Convenience Goods

Source: Own illustration

Home care products contain products such as detergents, cleaners and other care products for households such as automotive care or air fresheners (IKW, 2017, p. 11). The sales of detergents, cleaning and care products for private households in Germany grew from 3,689 million € in 2005 to 4,624 million € in 2015 (Statista 2017a).

Beauty care products comprise hair and skin care products, oral and dental care products, soaps and related products for shower and bath, deodorants and fragrances, shaving care products as well as a few special categories such as baby care and personal hygiene (IKW, 2017, p. 10). The sales of beauty care products in Germany grew from 11.45 billion € in 2005 to 13.39 billion € in 2015 (Statista 2017b) and reached 13.6 billion € in 2016 (IKW, 2017, p. 10).

Our selection of companies includes two of the biggest FMCG-companies of the world, Procter & Gamble (P&G) and Unilever, and one of the biggest in Germany, Henkel (Statista, 2017a, Statista, 2017b). All three companies come from Western cultures respectively the US, the Netherlands/Great Britain and Germany. We investigated cases for which a certain amount of information was freely available. These cases included one failure (Henkel), two failures turned to success (P&G) and one successful transfer (Unilever). The target markets are from Eurasia (Russia), Southern America

(Mexico) and Asia (Japan). This way a substantial cultural distance between company origin and target market is ensured. The cases include two beauty care products (sanitary napkin, shampoo) and two home care products (toilet rim block, laundry detergent / fabric softener). An overview of the cases can be seen in fig. 9.

Figure 9: Overview of Cases Selected

Company	Brand	Product	Target Market
Henkel	Bref Duo Stick	Toilet rim block	Russia
P&G	Always/Naturella	Sanitary napkin	Mexico
P&G	Ariel Ultra/Downy Single Rinse	Laundry detergent, fabric softener	Mexico
Unilever	Timotei	Shampoo	Japan

Source: own illustration

The Cultural Product Design Matrix (CPDM) needs to be operationalized to the requirements of the observed industry. Operationalization determines how the research objects can be measured (Döring and Bortz, 2016, p. 222). In our case, this means that the CPDM needs to be adapted to the vital product characteristics of the home and beauty care industry. For this, we choose all basic product characteristics except for signs (color, size/weight, shape, material, surface) and additionally scent and haptics as olfactory and tactile perceptions play a vital part for both beauty and home care products. Other sensory perceptions (flavor and sound) are ignored for obvious reasons. Signs are left out because in the FMCG industry they are typically irrelevant with regard to products, but usually only with regard to packaging. Furthermore we include both complex product mediums, features and quality, as we deem them important for the respective industry (see fig. 10).

Figure 10: Operationalized CPDM for Home and Beauty Care Products

		Product Language Functions		
		Aesthetic Functions	Indication Functions	Symbol Functions
Product Characteristics	Color			
	Size / Weight			
	Shape			
	Material			
	Surface			
	Scent / Haptics			
	Features (Dynamic Relations)			
	Quality (Static Relations)			

Source: own illustration

The cases are interpreted with the help of the operationalized Cultural Product Design Matrix. After the analysis and evaluation of the cases, results and recommendations are discussed. Furthermore, a general guideline for companies is established that focuses on the results.

5. Analysis of Individual Case Studies

To gain a better understanding of the challenges that companies face when expanding into foreign markets and different cultures, the following chapter provides an analysis of the four cases chosen in chapter 4. Each case is described based on published documents and then interpreted using the Cultural Product Design Matrix (CPDM) operationalized for products from the home and beauty care industry.

5.1. Henkel: Bref Duo Stick

Henkel is a German manufacturer in the consumer goods industry, and was established in 1876 with a global presence. It is one of the leading companies in the world regarding innovation, brands and technologies in the areas of adhesive technology, beauty care, and laundry and home-care. The company reported €18.7 billion in sales, €3.2 billion in adjusted operating profits and more than €6 billion in sales generated by top brands in 2016. The business unit of laundry and home care covers 31% (€5.795 million) of total sales, underlining 25 billion wash loads using Henkel products (Henkel, 2017a).

The laundry-and-home-care section, which is of interest in this research, includes products such as laundry detergents, laundry additives, dishwashing, hard-surface cleaners, toilet care, air care and insect-control products. Consumers know these products primarily by the top brand names: Persil, Pril and Purex (Henkel, 2017b).

In 2013, Henkel launched the toilet cleaner *Bref Duo Stick* in Slovakia, Russia and Kazakhstan. Henkel chose yellow and blue as the colors for the refining agent. To promote and advertise the product, Henkel created a television commercial that demonstrated the product in use: The product is stuck to the inside of the toilet bowl and cleans the toilet during the flushing process. This commercial was aired on Russian television, which is also watched by Ukrainian people. The product angered and insulted the Ukrainians because their perception was that their national flag was put into the toilet. The incident was reported by the news agency Reuters (2013) and then quickly picked up by other news sources in Germany (e.g. Handelsblatt, 2013, Spiegel-online, 2013, SZ, 2013) and internationally (e.g. Daily Mail, 2013, Express, 2013, NBC

News, 2013). The cultural blunder was linked to an incident of Jared Hasselhoff, bassist of the American rock band Bloodhound Gang, allegedly urinating on a Ukrainian flag during a concert. Henkel reportedly ceased to produce the color combination in question for the Bref Duo Stick. (Reuters, 2013).

Analyzing this case, it becomes clear that Henkel made an inadequate choice with regard to the symbolic functions. Tore Birol, Henkel's general manager for laundry and home care products in Ukraine, told the news agency Reuters that the colors of the block were chosen to symbolize lemon scent (yellow) and water and hygiene (blue) (Reuters, 2013). However, color and form of the toilet rim block resemble the Ukrainian flag: The form of a rolling rectangular can be associated with a flag waving in the wind. The Ukrainian flag consists of two colors, which are equally sized and aligned horizontally. The top stripe is blue and reflects peace, the sky above Ukraine and the country's streams; the bottom stripe is yellow and represents prosperity and the color of the country's wheat fields (Worldflags101, 2017). As mentioned, a national flag stands for loyalty, grace and respect. Consequently, when the Ukrainian people associated Bref Duo Stick with their national flag, they felt insulted.

In this case, aesthetic functions and indication functions are not affected. Blue, as research and literature suggest, is one of the most preferred colors among cultures, while yellow has a neutral preference (Madden, Hewett and Roth, 2000, p. 98). The colors blue and yellow should represent freshness and cleanness. So the customers could in all likelihood identify what the purpose of the product is: to keep the toilet fresh and clean. An overview of the affected fields of the CPDM is given in fig. 11.

Figure 11: CPDM for Bref Duo Stick (Henkel)

		Product Language Functions		
		Aesthetic Functions	Indication Functions	Symbol Functions
Product Characteristics	Color			**Colors of Ukrainian flag**
	Size / Weight			
	Shape			**Shape of a flag**
	Material			
	Surface			
	Scent / Haptics			
	Features (Dynamic Relations)			
	Quality (Static Relations)			

Source: own illustration

5.2. P&G: always / Naturella

P&G is an American consumer goods corporation, and was established in 1837. With its international expansion, P&G covers 70 countries worldwide in the consumer goods industry (P&G, 2017a). The areas of operation can be classified into 10 categories: baby care, fabric care, family care, feminine care, grooming, hair care, home care, oral care, personal-health care, and skin and personal care. The companies' top brands are always, Ariel, Pampers and Bold 2in1. In 2016, P&G generated $65.29 billion in

revenue and $13.44 billion in operating income. The main source of sales are the following business segment: fabric and home care (32%) followed by baby, feminine and family care (28%) (P&G, 2017b).

The company operated successfully in the Mexican market with its feminine care products, including body-hygiene products. P&G started with the launch of tampons, but quickly removed them from the Mexican market due to toxic-shock concerns and cultural reasons, since Mexican women usually do not use tampons. Later *always* sanitary napkins were launched. However, *always* is a high-end product and Mexico is a low-income country; therefore, it was necessary to adjust to socio-demographic and income factors and to focus on the essential product features. It was found that lower-income women in Mexico wear the pads longer than high-income women and, thus, have a stronger need for protection, wearing comfort and odor control. Furthermore, Mexican women prefer natural ingredients. These aspects were incorporated in the new development of the *Naturella* brand (Lafley and Charan, 2008, p. 87-88). Naturella was subsequently launched in other regions with low-income populations, e.g. Eastern Europe (P&G, 2008).

This case has a strong focus on the indicating functions. Mexican women had a stronger demand for protection, wearing comfort, and a clean and dry feeling. P&G included a new absorptive topsheet for protection, chamomile fragrance for odor control and a chamomile lotion for skin comfort while simultaneously stripping down all features deemed unimportant to reduce price. The symbol functions also seem to play a part in the cultural product design. P&G designed the sanitary pad with natural ingredients and herbal scents, which are considered to be healthy in Mexico because of long-standing traditions (Lafley and Charan, 2008, p. 88-89). The chamomile scent can also be interpreted as an aesthetic function. Odor control is an important factor in Mexico because women mostly utilize public transport. Since herbal scents are considered healthy, they are probably also aesthetically pleasing. An overview of the affected fields of the CPDM can be found in fig. 12.

Figure 12: CPDM for always / Naturella (P&G)

		Product Language Functions		
		Aesthetic Functions	Indication Functions	Symbol Functions
Product Characteristics	Color			
	Size / Weight			
	Shape			
	Material		**Topsheet material** **Chamomile lotion**	**Natural ingredients (health)**
	Surface			
	Scent / Haptics	**Herbal scent**	**Chamomile lotion and herbal scent**	**Herbal scent (health)**
	Features (Dynamic Relations)			
	Quality (Static Relations)		**Topsheet (protection)** **Fragrance (odor control)** **Lotion (skin control)**	

Source: own illustration

5.3. P&G: Ariel Ultra / Downy Single Rinse

In the late 1980s, P&G launched the laundry detergent *Ariel Ultra* in the Mexican market. Considering Mexicans' limited space in households and low-income economy, the detergent offered better cleaning performance in half the amount of time using half the amount of product. But since people in Mexico used mainly hand washing or semi-automatic washing machines, they were put off by the lack of foam the product generated. A feature, which people in developed countries take as a sign of environmental

friendliness, people in Mexico took as a sign of ineffectiveness. Furthermore, the effort of hand washing is determined by the amount of water and rinsing steps needed, not so much by the amount of product (Lafley and Charan, 2008, pp. 37-38).

P&G managed to avoid these shortcomings with the launch of the fabric softener *Downy Single Rinse* in 2004. Central features of the product were adapted to the needs of the target market: The product was made to foam during the washing process resulting in a feedback to the Mexican women that the product is doing its job. Furthermore, the product cut the rinsing steps from six to three and eventually to one reducing the amount of water and effort during the process of hand washing (Lafley and Charan, 2008, p. 38-40, P&G, 2008).

The insights of this product introduction were transferred by P&G to other countries facing water shortage or scarcity. As Bea Buyle, manager of environmental stewardship and sustainability at P&G, states about Downy Single Rinse: “This product not only makes a difference in the amount of water used, but also it saves time for women and children, who often need to walk for hours to fetch the household water” (DuPont, 2014). Consequently, Downy Single Rinse has been introduced into 12 other countries with a similar situation with regard to water availability (P&G, 2008).

In this case, the indication functions were inappropriate for the situation in the target market. Since people in Mexico mainly use hand washing or semi-automatic washing machines, foam is an important feedback that the product is actually working. Since cleaned clothes are a status symbol for Mexicans and indicate a good mother and housewife, an effective detergent is very important to them (Lafley and Charan, 2008, pp. 37-38). A lack of foam seriously undermines the confidence that Mexicans have in the effectiveness of the detergent. Furthermore, the amount of detergent and amount of water are central qualities of a detergent in the hand washing process, especially in regions where water is scarce. Len Saunders, P&G’s Vice President Global Sustainability sums this insight up comparing the situation in the developed and developing world: “If I think of the developed world and I look at the laundry sector, energy is the main sustainability theme. […] If we look at the developing world, under laundry, water drives the footprint” (KPMG, 2014, p. 21). Aesthetic and symbol functions were not affected in this case – at least not directly. But since cleaned clothes also serve as a

status symbol in Mexico, it could be argued that the lack of confidence in the effectiveness of the product also strays into the area symbolic functions. An overview of the affected fields of the CPDM is given in fig. 13.

Figure 13: CPDM for Ariel Ultra / Downy Single Rinse (P&G)

		Product Language Functions		
		Aesthetic Functions	Indication Functions	Symbol Functions
Product Characteristics	Color			
	Size / Weight			
	Shape			
	Material			
	Surface			
	Scent / Haptics			
	Features (Dynamic Relations)		**Foam (feedback)**	**Foam (cleanliness)**
	Quality (Static Relations)		**Amount of detergent (hand washing)** **Water consumption (hand washing)**	

Source: own illustration

5.4. Unilever: Timotei

Unilever is a Dutch-British company, which was established in the 1890s, and produces and sells consumer goods. Their primary areas of product categories include nourishment, cosmetics, body care, home care and textile care. Their vision is to make customers feel and look good, adding more to life (Unilever, 2017a). In 2015, the company generated 7.515$ Mio in operating profits and 53.272$ Mio in turnover (Unilever, 2017b). Well-known products from Unilever are, for example, Dove, Axe and Domestos.

Unilever was successful in launching its product, *Timotei*, which is a natural hair-care shampoo for females, in Japan. Timotei was first launched in Sweden and quickly expanded to other countries (Huddleston, 1938, p. 184). Part of the success is attributed to aesthetic functions. Apart from the packaging design which appealed to Japanese women through white coloring (indicating clean and natural), big size (daily use of shampoo), robustness (frequent earthquakes) and a smoothly working cap (Jones, 2005, p. 105, Kageyama, 2007, Japan Today, 2014), the product's scent was adjusted to suit feminine preferences, such as sweet, floral, yet still refreshing (Everbluec, 2013). The scent can also be interpreted as a symbolic function indicating femininity for the user of the product.

Indication function plays an important role, since the brand name comes from the Finnish Timothy-Grass, which is wild grass. Nature is of significance because the Japanese wash their hair many times during a week, and they appreciate natural ingredients. Timotei is made with pure, natural herb extracts – an attribute that demonstrates consideration for the environment (Everbluec, 2013). Superior mildness in a shampoo (Woodman, 2010, p. 90) is an essential factor in Japan, considering daily hair wash; therefore, the Japanese could wash their hair often, without damaging it, and still receive the nourishment of added oils and flowers (Japan Today, 2014; Everbluec, 2013). This especially underlines the product's quality in terms of desired actions and usage (mildness for daily use).

The natural ingredients also serve as a symbol function signaling the mildness of the shampoo. Furthermore, a symbol function refers to the Western image of beauty. The Japanese look to Western countries as an example; therefore, high quality and high-end products are significant. Timotei was advertised as a product that used natural ingredients and made the hair and scalp feel clean and shiny; it offered customers a high-end product at an affordable price. Furthermore, it enabled Japanese women to receive expert hair care at home, and conveyed a sense of luxuriousness, which symbolized self-confidence and beauty (Kageyama, 2007). An overview of the affected fields of the CPDM can be found in fig. 14.

Figure 14: CPDM for Timotei (Unilever)

		Product Language Functions		
		Aesthetic Functions	Indication Functions	Symbol Functions
Product Characteristics	Color			
	Size / Weight			
	Shape			
	Material			**Natural ingredients (mildness)**
	Surface			
	Scent / Haptics	**Sweet, floral scent**		**Sweet, floral scent (feminity)**
	Features (Dynamic Relations)			
	Quality (Static Relations)		**Mildness (frequent use)**	**High quality product (luxurious-ness)**

Source: own illustration

5.5. Overview and Summary

After the analysis of four cases of cross-cultural innovation efforts from the home and beauty care industry some general observations can be made. Most of the product characteristics affect the indication and symbolic functions of the cases. Only scent has an influence on the aesthetic functions in two of the four cases. Color and shape only affect the symbol functions in the case of Bref Duo Stick. Size/weight and surface do not play a role at all in all the considered cases. This is probably due to the fact that for some of the products from the home and beauty care category these characteristics are determined by packaging rather than by the product (see e.g. the Timotei case).
All the other product characteristics affect both the indication and the symbol functions or in the case of scent all three functions. Especially the field of quality and indication

functions includes three of the four cases showing that the perceived qualities of a product are a strong indicator for a product's category and functionality.

An overview over all the combinations of affected product characteristics and product language functions is given in fig. 15.

Figure 15: Overview of affected fields of the CPDM

		Product Language Functions		
		Aesthetic Functions	Indication Functions	Symbol Functions
Product Characteristics	Color			**Bref Duo Stick**
	Size / Weight			
	Shape			**Bref Duo Stick**
	Material		**always / Naturella**	**always / Naturella** **Timotei**
	Surface			
	Scent / Haptics	**always / Naturella** **Timotei**	**always / Naturella**	**always / Naturella** **Timotei**
	Features (Dynamic Relations)		**Ariel Ultra / Downy Single Rinse**	**Ariel Ultra / Downy Single Rinse**
	Quality (Static Relations)		**Ariel Ultra / Downy Single Rinse** **always / Naturella** **Timotei**	**Timotei**

Source: own illustration

6. Conclusion

Every culture has its own traditions and values, which are reflected in certain behaviors. This also influences the perception of new products. Companies, who are planning to operate across borders and to sell their products to unfamiliar cultures, should focus on local adaptation of preferences in product development, rather than offering a standardized product.

By combining product characteristics and product language functions we developed the Cultural Product Design Matrix (CPDM) as a framework for cross-cultural product design. The product characteristics are based on the basic and complex product design mediums according to Koppelmann (1997). The product language functions were taken from the Offenbach Theory of Product Language as described by Steffen (1997, 2000, 2007) with some inputs from other sources.

The CPDM can be used to describe impacts of product characteristics as defined by the designer on the perception of the customer in the fields of aesthetics and semantics, i.e. indications and symbols. Moreover, it can help explain the reasons for failures or successes when companies try to transfer products to a foreign cultural sphere. As such it is a descriptive as well as explanatory framework for cross-cultural design efforts. The four examined cases from the home and beauty care industry show that the CPDM is a valid and useful approach – at least with regard to consumer goods.

The limitations of the research approach mainly lie in the limited number of investigated cases. So far, only four case studies from the home and beauty care industry have been conducted. Further research could apply the CPDM to other products and cultural combinations. With regard to products, further FMCGs can be investigated, and the approach could be applied to durables and industrial goods to see if the CPDM also works in these contexts. With regard to cultural combinations, further cases of Western companies who introduced products into other cultural spheres can be investigated, but the reverse case, i.e. the introduction of a product from a non-Western cultural sphere into a Western culture, could also be of interest.

So far, the CPDM only includes product characteristics, but the success of a product, especially a FMCG, often also depends on packaging design. Further investigations have to show, if the CPDM or an adapted version can also be sensibly applied to cross-

cultural packaging design. A further limitation is the focus on physical products. Further research could also include software or services. Furthermore, brands and brand names were not considered, which might have an impact on purchase decisions and could be a further field of investigation. Brand names can lead to cultural blunders if the brand name has a different meaning in the target language, if the sound of the brand name leads to negative emotions or if the form of the brand name causes unpleasant associations (Zhu, 2009).

The CPDM only includes the cultural aspects of product perception. However, the introduction of a product into a new market is often affected by the socio-demographic differences of the target culture. Products sometimes have to be sold in smaller packaging sizes due to smaller incomes (Czinkota, Ronkainen and Zvobgo, 2011, p. 311), or smaller sizes of products are preferred because of limited storage space or smaller households (Shenkar and Luo, 2008, p. 457).

Finally, the CPDM only considers the use of the product, but the decision process and the purchase process are not included. Further research could determine differences in the different points of contact a company has with its customers in the buying process. This is especially valid for FMCGs as the buying decision has to be renewed every time the consumer buys a product from the respective product category again.

We hope that the CPDM is a helpful tool for research as well as for practical uses in companies. In research, the CPDM can be used as a descriptive and explanatory framework for cross-cultural design and innovation. With enough analyzed cases it might be possible to identify typical profiles of relations between product characteristics and product language functions as well as typical interaction patterns between the three product language functions. So far, we found a few interactions between the different product language functions, but it is too early to draw any conclusions.So the analysis of further cases should shed more light on this issue. For identified profiles and patterns norm strategies for cross-cultural product design might be developed. Furthermore with a large enough number of analyzed cases, quantitative analysis might become possible.

For companies the CPDM could support the product development process when different cultures are involved. Furthermore, it could be used for post-mortem analyses to identify successful and unsuccessful design elements. In this regard, the CPDM is

not the proverbial silver bullet. The CPDM needs cultural experts as all cross-cultural innovation activities (Deckert, Köhler and Scherer, 2014) to come to the right conclusions, but the CPDM can serve as a guideline for analysis and interpretation given the required cultural background knowledge.

In general, cultural product design should be carefully examined by companies because product characteristics can strongly influence purchase decisions. In our globalized world, these impacts will in all likelihood increase. Therefore, companies should consider the cultural perspective when they develop products for markets with different cultural backgrounds.

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