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Abstract

Conveying distinctive and coherent brand associations is a key concern of modern brand management. Brands with a concise, consumer-relevant, and unique brand image are preferred by consumers. This study considers the contribution brand names can provide to building customer based brand equity. Recent cognitive theories of conceptual combination form the theoretical basis for analyzing consumer reactions toward brand names. Following these theories, three techniques to integrate brand name and product are developed. Reaction time measurements and association tests show that the techniques presented are an effective and efficient means to convey a brand's image.

Keywords

Dimension, Based, versus, Relation, Based, Brand, Name, Design, test, different, psycholinguistic, theories

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DIMENSION-BASED VERSUS RELATION-BASED BRAND NAME DESIGN: A TEST OF DIFFERENT PSYCHOLINGUISTIC THEORIES

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ABSTRACT

Conveying distinctive and coherent brand associations is a key concern of modern brand management. Brands with a concise, consumer-relevant, and unique brand image are preferred by consumers. This study considers the contribution brand names can provide to building customer based brand equity. Recent cognitive theories of conceptual combination form the theoretical basis for analyzing consumer reactions toward brand names. Following these theories, three techniques to integrate brand name and product are developed. Reaction time measurements and association tests show that the techniques presented are an effective and efficient means to convey a brand's image.

INTRODUCTION

Building customer-based brand equity is a key concern of brand management (Keller 2003) because brands that possess strong, favorable, and unique associations are often preferred in purchase decisions. Generally speaking, brand equity involves a learning process during which the consumer learns to associate a brand with a specific attribute or attributes (Van Osselaer and Janiszewski 2001). In this process brand names play an important role (Keller 2003). At every contact with a brand at the point of sale (POS), in advertising or during the use of the brand the name is activated. Hence, effective and efficient conveyance of targeted brand associations through the brand name is important for the success of new brands. However, if the brand name itself does not communicate relevant associations, then the less efficient route of advertising or other marketing tools must be used to do this job.

Previous research on brand name effects has neglected the contribution brand names can provide for the creation of customer-based brand equity. Instead, previous research has focused on the investigation of memory effects of brand names (e.g., Kanungo 1968; Keller, Heckler, and Houston 1998; Misra and Jain 1971; Richards and Heller 1976; Robertson 1987), phonetic effects of brand names (e.g., Dogana 1967; Janbandhu and Gupta 1978; Peterson and Ross 1972; Pavia and Costa 1993; Taylor 1963), and the impact brand names can have on product evaluation (e.g. Heath, Chatterjee, and France 1990; LeClerk, Schmitt, and Dubé 1994; Miller, Mazis, and Wright 1971; Zinkhan and Martin 1987). Up to now, no theories or models have been proposed to explain how consumers derive attribute associations from the conjoint perception of brand name and product. However, integrative theories are indispensable, since brand name and product are usually perceived conjointly, not separately, by the consumer.

THEORETICAL BACKGROUND

Psycholinguistic theories that suggest models, most of them developed recently, for the explanation of people's interpretation of conceptual combinations provide a starting point for the examination of the interaction of brand names and products. The theories of conceptual combination propose several processes of inference that allow people to understand word

combinations, such as “country child” or “tiger duck” (e.g., Costello and Keane 2000, 2001; Downing 1977; Gagné 2000, 2001; Gagné and Shoben 1997; Levi 1978; Murphy 1988, 1990; Shoben and Gagné 1997; Smith, Osherson, Rips, and Keane 1988; Wisniewski 1996, 1997, 1998, 2001). In these models, there is (usually) a fixed pattern in the interpretation of verbal compounds whereby the two words adopt different functions depending on their order in the combination. The last concept in the compound (head) generally inherits the category belonging to the combination, whereas the first concept (modifier) acts by modifying the head. For example, a “tiger duck” is a duck (head) with stripes like a tiger (modifier) and an “apartment dog” is a dog (head) kept in an apartment (modifier). The inference processes suggested for the conceptual combination theories differ primarily in whether the integration of schemata occurs via attributes or relations. Following, we outline the most promising conceptual combination theories. These are the dimension-based models of Selective Modification and Property Mapping, and a relation-based model called CARIN.

Connecting brand names and products via selective modification: The selective modification model considers combinations of predicating adjectives and nouns (Smith and Osherson 1984; Smith et al. 1988). Predicating adjectives, such as “red,” “round,” and “fast,” are much simpler than noun concepts because they are characterized by a single attribute. Both concepts are subject to an asymmetric division of roles: the adjective functions as the modifier, the noun as the head. The conceptual combination generally inherits all attribute associations of the noun. During the interpretation process, the adjective modifies the corresponding slot among the noun’s associated attributes. The result is a combination that changes the character of the noun. In the conceptual combination “red apple,” the modifier “red” fills the slot “color” in the head “apple” and thereby transfers its salient characteristic to the noun. As a rule, the slot-finding process is controlled by the characteristic described by the adjective. Thus, the recipient only has to know the adjective and the noun to find the correct slot. The process of interpretation functions independently of knowledge that lies outside the activated schemata (background knowledge). The application of the selective modification model to the design of brand names presumes that the name takes on the function of the predicating modifier. For example, in terms of a conceptual combination, “Rapido” as brand name for a washing machine would be understood as a “fast washing machine” (see Figure 1). Note that these examples, and our experiments, as in marketing, use a verbal brand name (the first word in the combination) and a picture of the product, which we presume is automatically verbally labeled by the consumer (providing the second word in the combination).

Connecting brand names and products via the property mapping model: In principle, the property mapping model proposed by Wisniewski (1996, 1997, 2001; Wisniewski and Gentner 1991) functions similarly to the selective modification model. However, in this model the combinations considered are formations of two *nouns*. The first serves as the modifier and the second as the head. The basis of property mapping is a comparison process in which the attributes of modifier and head are compared with respect to their similarity in order to pinpoint a salient difference between head and modifier. A prerequisite for unambiguous property mapping is the existence of a salient attribute in the modifier, an attribute common to the modifier and the head (Wisniewski 1996; Bock and Clifton 2000; Gagné 2000). During the inference process, the value of the salient attribute of the modifier overwrites the corresponding value of that attribute in the head. The combination “zebra dog,” for example, is interpreted as “a dog that is striped like a zebra” because the salient attribute “zebra stripes” of the concept zebra modifies the slot “markings of the fur” within the head concept “dog.” To give another example, the brand name “Mouseno,” which is usually

associated with the concept “mouse” (salient association: “small”), will modify the attribute “size” within the pictured concept “cell phone.” This leads to the interpretation of the conceptual combination as a “small cell phone” (again, see Figure 1).

Connecting brand names and products via relation linking: The CARIN (Competition Among Relations in Nominals) model, the mostly developed relational model, also concentrates on the slot-filling process of double noun combinations (Gagné and Shoben 1997; Shoben and Gagné 1997; Gagné 2000; Gagné 2001), but in a different way than the property mapping model. In CARIN, recipients must find the appropriate relationship between the two nouns in order to understand the compound. The model is based on the theory that recipients fall back on stored standard relations in the processing of noun compounds; by a process of trial and error the appropriate relation from the repertoire of standard relations is selected and used to interpret the combination of the two nouns. Shoben (1991) suggests a taxonomy of frequently used standard relations to connect head and modifier concepts to each other (e.g., “causes,” “made of,” “for,” “located,” and “uses”). For example, “chocolate bird” is usually understood as “a bird made of chocolate.” During the processing of a conceptual combination, the relations stored in the modifier schema are checked for their suitability for the interpretation of the current verbal compound. The cognitive effort for the understanding of the combination depends on how many different relations exist for the modifier and how frequently these are used with the modifier in everyday language. If a modifier is connected with a head using a highly frequent relation, then the cognitive effort needed for the understanding of the compound is smaller. The modifier “chocolate,” for example, is frequently used with the thematic relation “made of.” The combinations “chocolate bird,” “chocolate rabbit,” and “chocolate car” are therefore easy to understand (Shoben and Gagné 1997, p. 35). However, the interpretation process is more difficult for relations which are less frequent for a modifier. In addition, the cognitive effort necessary for the interpretation increases with the number of thematic relations that compete for a plausible solution. By applying relation linking to brand name design, the thematic relation that links the two constituent concepts creates a meaningful context for brand associations. For example, the picture of a pack of pills is linked with the brand name “Figurella” via the specific thematic relation “causes” and is consequently understood as “pills that cause weight reduction” (again, see Figure 1).

THE STUDY

The previously outlined conceptual combination theories were applied to the design of brand names and tested within four experiments regarding the effectiveness and efficiency with which they convey specific brand associations (between-subjects design). In a control group, name-product discrepancies that allow no plausible interpretations were also tested.

The efficiency of the combination techniques: The hypothesized efficiency of the three combination techniques and the control technique is as follows. *Selective modification:* The initial analysis of the two schemata should be easily accomplished within a short period of time, since the schema activated by the predicating brand name (usually derived from predicating adjectives: “Robusta,” “Rapido”) normally consists of just a single attribute and is generally much simpler than a noun concept that involves a whole range of different features. A conceptual combination that follows the pattern of selective modification leaves room for only one interpretation (Smith and Osherson 1984; Murphy 1988, p. 535; Smith et al. 1988). Time-consuming tests of alternative interpretations are therefore not required. *Property mapping:* Here, the brand name is non-predicating. Once the initial analysis comes to an end,

a search for the salient difference between head and modifier starts (Wisniewski 1997, pp. 175ff.; Wisniewski and Love 1998, p. 181). Thus, property mapping demands an extensive comparison process in which the attributes of head (product) and modifier (brand name) become evident. When the salient attribute of the modifier is finally identified, its value overwrites the value of the corresponding attribute in the head ("construction process"). If only one salient attribute exists, then only one interpretation is possible. In that particular case, an evaluation of competing solutions does not occur. As this comparison process is not necessary for selective modification, the processing of brand names modeled on property mapping should consequently display a lower efficiency. *Relation linking*: Again, both of the combined concepts are non-predicating. For this reason, the time needed for the initial analysis should be approximately the same as for property mapping. In contrast to the preceding combinations, there are, however, frequently used relations which compete in the interpretation process. The recipient's knowledge and experience regarding the frequency of a specific modifier in standard thematic relations leads in many cases to an appropriate interpretation of verbal combinations (Gagné and Shoben 1997; Gagné 2001, p. 237). The interpretation of a word pair is tested first with the most frequently used relation for the modifier. If this does not lead to a plausible interpretation, then the second most frequent relation will be tested, and so on. This search continues until a satisfying interpretation is found. Nevertheless, there are some indications that this mechanism is often *not* effective in the interpretation of brand names. In modern brand design brand names that are combined with products via thematic relations are less frequent than relation linking in daily verbal communication. Therefore, it is not surprising that many people lack the experience necessary to facilitate the interpretation process. As a consequence, it is highly probable that for many relational brand names a number of competing thematic relations must be tested before the recipient arrives at a plausible interpretation. This time-consuming evaluation of alternative solutions delays the whole interpretation process. Hence, it can be assumed that relational name-product combinations convey brand associations with a lower efficiency than the preceding combinations. *Name-product discrepancy*: Brand name-product discrepancies also consist of non-predicating concepts. Thus, the effort put into the initial schema analysis is again comparable to the effort needed in the preceding combinations. When processing name-product discrepancies, the recipients attempt to establish a coherent connection between both concepts. They have to draw on their entire world knowledge looking for information which may then lead to a plausible interpretation of the combination (see also Kunda, Miller, and Claire 1990). Since both concepts do not share a logical connection, the recipient terminates the search after a while and is satisfied with a less convincing interpretation. This process may require a cognitive effort which goes beyond the interpretation processes described so far. For this reason, it can be hypothesized that name-product discrepancies will take the longest time to be processed. The following overall hypothesis about efficiency can be formulated from the preceding discussion: **H1**: Brand names modeled on selective modification will generate the highest efficiency, followed by names combined via property mapping, then names modeled on relation linking, and least efficient will be name-product discrepancy.

The effectiveness of the combination techniques: The effectiveness with which a combination pattern conveys brand associations depends on the number of competing interpretations which need to be evaluated independently from each other within the interpretation process. If more than one interpretation is possible, the probability increases that consumers generate different explanations due to their divergent world knowledge. As far as selective modification and property mapping are concerned, there is always just a single logical interpretation. The effectiveness of these combination techniques should therefore be high. With reference to relational combinations, this is slightly different. Here numerous

thematic relations often compete for the interpretation. Due to individual differences in stored world knowledge, the recipients testing the plausibility of alternatives may arrive at diverse results. Lastly, due to the fact that there are no meaningful messages in name-product discrepancies, the effectiveness of such combinations cannot be quantified. Therefore, the following overall hypothesis can be formulated about effectiveness: **H2:** Brand names modeled on selective modification and property mapping will produce the highest effectiveness, those modeled on relation linking will be only moderately effective, and those that use a name-product discrepancy will be completely ineffective.

METHOD

Variables: Independent variables in the study are the four combination techniques. Dependent variables are the efficiency and effectiveness with which the brand names convey specific brand associations. Effectiveness, as a measure of goal achievement, provides information about how unambiguously a name-product combination communicates the right (the intended) brand attribute. This variable is measured by comparing the actual evoked association responses with the intended brand association (e.g., Keller 1993, p. 7). Hence, the measure for effectiveness is reflected by the percentage of the sample that arrived at the appropriate interpretation of a given brand name-product combination. Efficiency, on the other hand, represents the cognitive effort necessary to deduce the right brand association from a name-product combination. A widely accepted indicator of cognitive effort is reaction time, which directly correlates with the cognitive effort needed to find an answer (Gagné 2001).

Stimuli: Altogether 21 brand name-product combinations were used for the experiments. Invented words were selected as brand names to evoke a clear association based on their overall sound pattern. A pretest ($n = 80$) guaranteed that the fictitious brand names communicated the desired associations.

Procedure and subjects: The combination techniques were tested in a between-subjects design ($n=120$; equal number of males and females). In the experiment focusing on selective modification six stimuli were used, in property mapping four, and in the control group five. In the experiment on relation linking, six thematic relations were carefully chosen for six stimuli. A systematic two-fold rotation was employed to prevent serial effects in the presentation of the stimuli. The stimuli were displayed on a computer screen.

RESULTS

Efficiency of name-product combinations: The experiments revealed a significant hierarchy of the reaction times with which the name-product combinations communicated the correct brand associations (or in the case of name-product discrepancies, any association). The fastest reaction time was observed for the processing of combinations following the pattern of selective modification (mean=2.88 seconds; $sd=.60$). Slightly slower reaction times were recorded for property mapping (mean=3.47 seconds; $sd=1.15$). As expected, the reaction times of relation linking (mean=5.08 seconds; $sd=1.53$) were longer due to the alternative interpretations that could be made. Finally, the slowest reaction time (mean=6.26 seconds; $sd=2.24$) was recorded for name-product discrepancies. Hence, H1 was confirmed (all $ps<.05$).¹

¹ To check hypothesis H1, the T-Test respectively the Welch-Test were applied. This is a test of a hypothesis system. For this reason, the levels of significant or highly significant combinations must be modified according to the process developed by Shaffer (1986, p. 826). Therefore, the following values result with the

Effectiveness of name-product combinations: The effectiveness with which the targeted brand associations were conveyed was highest for property mapping (92.22%) and selective modification (92.00%). However, if alternative solutions compete for the interpretation of a conceptual combination, the probability increases that subjects will find various explanations for the name-product combination and for this reason the effectiveness of relation linking was, as expected, significantly lower than the effectiveness of the first two combination techniques (76.70%). The control technique, name-product discrepancies, was completely ineffective. Hence, H2 was confirmed (all $ps < .01$).²

PRACTICAL AND THEORETICAL IMPLICATIONS

The present study represents the first attempt, as far as we are aware, to apply theories of conceptual combinations to the field of branding. The present experiments compared all established conceptual inference mechanisms to each other with respect to their efficiency and effectiveness. The findings for brand name plus product picture combinations were exactly as predicted by the respective psycholinguistic word combination theories.

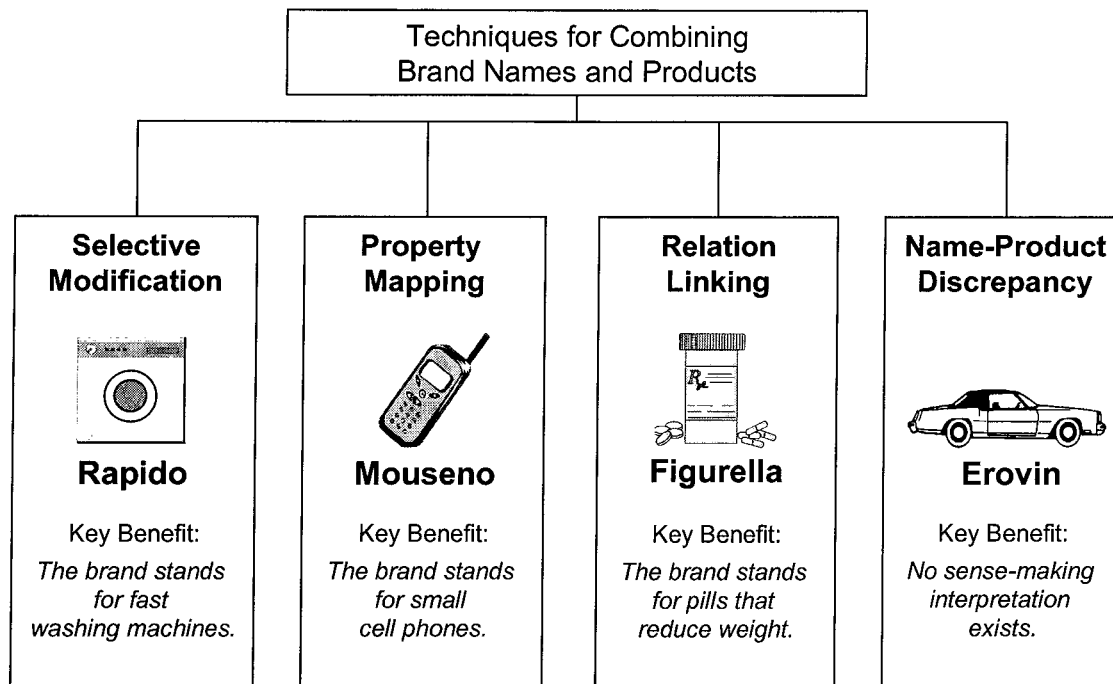
The present study provides a promising starting point for future psychological research in the field of conceptual combinations. As today the average viewing time for a product at the point of sale is only a few seconds (Russo and Leclerc 1994), it is essential that brand elements convey clearly and quickly what the brand stands for. Building on the present results, conclusions can be drawn for branding practice regarding how to combine brand names with products so that a brand communicates a key benefit association clearly and quickly. Of all techniques analyzed, selective modification and property mapping constituted the most effective and efficient combinations of brand names and products.

The main limitation of this study is that it is based on laboratory experiments in a high-involvement setting. Subjects could look at the stimuli for as long as they desired. Future research should focus on the effectiveness of combination techniques during incidental brand exposure. Also it will be of interest to examine how the combination techniques influence other consumer responses, such as brand recall prior to the purchase situation and brand recognition during it. The present study assumes that the brand name on the product will be recognized – or initially cognized if seen for the first time – and that the key benefit association will then be made to varying degrees across consumers and with varying speeds depending on the psycholinguistic model from which the brand name was generated.

Shaffer correction: The lowest level of significance of the hypothesis system must have a value of 0.0017 (significance: 0.0083) to prove a highly significant combination. The second, third, and fourth values must be less than 0.003 (significance: 0.017), the fifth smallest value must be less than 0.005 (significance: 0.025) and the sixth smallest values must be less than 0.01 (significance: 0.05).

² To check hypothesis H2, the Mann-Whitney Test was applied. This is a test of a hypothesis system. For this reason, the levels of significant or highly significant combinations must be modified according to the process developed by Shaffer (1986, p. 826). However, in contrast to the previous studies, there are only three pairs of comparisons, since no value can be calculated for the effectiveness of the picture-word discrepancy. Therefore, the following values result with the Shaffer correction: The lowest level of significance of the hypothesis system must have a value of 0.0033 (significance: 0.0166) to prove a highly significant combination. The second and third values must be less than 0.01 (significance: 0.05).

Figure 1: Different techniques for combining brand names and products



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