The impact of naturalness on affective response to logo design: A cross-national study

Abstract

Literature concerned with logo strategy suggests that the aesthetic appeal of brand logos significantly influences consumer responses. Yet, despite the fact that companies invest significant amounts of time and money promoting, updating and changing their logos, empirical studies of logo design issues are rare. In particular, there is little systematic research on the effect of logo design across different cultures. The main purpose of this research is to address the communalities and asymmetries between consumer responses to logo design across cultures. In particular, we focus on the influences of different types of natural designs on consumers' affective responses in three different countries, Portugal, Spain and The Netherlands. Findings should provide relevant contributions for multinational companies since logos are critical brand identity sings and they tend to be used in an unaltered form in new markets.

Keywords: *brand logo design, consumer response, cross-cultural*

Track: *Product and Brand Management*

1. Introduction

The global branding paradigm is increasingly important since firms need to employ global approaches to communicate their offerings cross-country (Steenkamp, et al, 2003). It is therefore critical for multinational firms to consider cultural differences in order to develop brand strategies with global appeal (Madden, et al., 2000). One brand element that managers tend to use globally is the logo (van der Lans *et al*, 2009). Empirical cross-cultural studies that contribute to the theory development of design preferences across countries are particularly relevant (Henderson et al., 2003). This study builds on extant literature and aims to go one step further by addressing empirically communalities and asymmetries between consumer responses to logo design across cultures. In particular, we focus on the influence of different types of natural designs on consumers' affective responses.

2. Theoretical Background

We use the term "logo" to refer to the separate visual symbol that a company uses to identify itself or its products (Henderson and Cote, 1998). Logo design is critical in building consumers' perceptions of a brand, and aesthetic logo designs can enhance brand commitment and elicit strong affective responses (Bloch, 1995; Park *et al*, 2013). It is therefore essential to understand how design creates positive affective responses.

Henderson and Cote (1998) identified three fundamental design dimensions, namely elaborateness (i.e. the richness of the logo design), harmony (i.e. the congruency of the patterns and parts of the logo design) and naturalness. In this study we focus on naturalness, which is a critical dimension that influences consumers' cognitive and affective responses not only to the logo, but also to the typeface and packaging design(Henderson and Cote, 1998; Henderson et al, 2003; Orth and Malkewitz, 2008).

Natural designs are defined by the degree to which the design depicts commonly experienced objects (Henderson and Cote, 1998). Logos representative of objects that have familiar meanings are more effective at producing correct recognition and positive affect. Abstract logos are the least effective category both in terms of recognition and image contribution. Moreover, Orth and Malkewitz (2008) found that natural packaging designs generate favorable impressions and evoke happy memories. Thus, we expect greater affect for logo designs that represent objects from the natural or real world versus logo designs that represent abstract objects, independently of the culture.

H1. Affect toward natural logo designs is greater than affect toward abstract logo designs.

Based on Machado et al (2015) we additionally distinguish within natural designs between cultural and organic designs. Organic logo design refers to logos that depict "biological objects" (i.e., flowers, animals, faces, etc.), and cultural logo design refers to logos that depict "manufactured objects" (e.g. house) or other cultural symbols (e.g. punctuation marks). Organic objects are immediately recognized for their sensitive properties; cultural objects should be more difficult to memorize and trigger less positive affective responses (Greimas and Courtés, 1993). Research on design also suggests that humans have an innate preference for natural forms that embody organic principles (Papanek, 1984). Hence, we expect that, within natural designs, affect towards organic logo designs will be greater than affect toward cultural designs.

H2. Within natural designs, affect toward organic logo designs is greater than affect toward cultural designs.

Even though there are arguments supporting standardization and adaptation strategies for global brands, there is a tendency to standardize the corporate visual identity (Melewar and Saunders, 1999).We contribute to this research line by studying the effect of the different types of natural logo designs on affective response across cultures.

Most cross-cultural studies on logos use Hofstede's cultural index (Hofstede, 1908; 2001). Since logos are critical identifiers that reduce information asymmetries and uncertainty, Hofstede's Uncertainty Avoidance dimension (UAD) is the dimension that should capture sources of asymmetries in affective reaction across countries. UAD expresses the degree in which the members of a society feel uncomfortable with uncertainty and ambiguity (Hofstede, 1980). Countries exhibiting high scores on the UAD maintain rigid codes of belief and behaviour. Low UAD scores correspond to societies that maintain a more relaxed attitude in which practice counts more than principles. Hence, we hypothesize that cultures characterized by high levels of UAD display a preference for known designs. As organic representations are the most familiar ones, we expect to link this to cultures with higher scores on the UAD.

H3.1: Affect towards organic logo designs is higher within cultures with higher levels of UAD than within cultures with lower levels of UAD.

H3.2 Affect towards abstract logo designs is higher within cultures with lower levels of UAD than within cultures with higher levels of UAD.

We collected data from three European countries: Spain, Portugal and The Netherlands. While Portugal and Spain display similar values on the UAD, the Netherlands differ with lower values on the UAD. Spain is used as control, and the Netherlands is hypothesized to display differences with respect to the two other countries.

3.   Method

A total of 662 respondents participated in this study: Portugal (n = 220), Spain (n = 255) and The Netherlands (n = 187). We used a convenience sampling technique and collected data using an online survey. We predominantly used unknown logos, so that we could eliminate the influences of brand knowledge on consumer's responses to logo design (Keller, 1993). However, to understand the influence of brand awareness on affect towards logo design, we included a small set of known logos.

In order to identify logos representative of the different categories, we searched through books and websites related to logo design. Additionally, we asked non-European researchers to suggest national logos with a low probability of being recognized in Europe. These approaches allowed us to build a large logo database. Semiotic classification of design and logo strategy terminology were used to classify the logos as abstract, organic and cultural. For inclusion in this study we considered only the logos whereby all of the researchers agreed with the classification of the logo in terms of recognition and design. Logos were then randomly selected for each category.

96 pre-selected logos were presented to the respondents in each of the three selected regions. Logos were divided into two blocks of 48 logos, to avoid responders' fatigue. Each block was evaluated in the three countries by at least 90 respondents. We used a within-subjects design, so all participants were presented with several abstract, organic and cultural logo designs. Each participant evaluated 36 unknown logos (12 abstract, 12 cultural and 12 organic) and 12 well-known logos (4 abstract, 4 cultural and 4 organic).

Respondents were first asked if they knew which brand the logo represented. They were then asked to categorize the logo as abstract, cultural or organic. In order to answer this question, they were given definitions of the different logo designs. Next, we evaluated affect. To capture affect according to logos knowledge and naturalness, we considered items and logos. To measure a latent variable such as affect, typically at least two items are considered. We planned to measure affect using a seven-point semantic differential scale adapted from the literature, which would allow us to access the feelings that the logo inspired (dislike/like; unpleasant/pleasant) (Kim *et al.*,1998; Milberg *et al.*, 1997). However, pre-testing indicated that these two items overlapped, thus we decided to

include only the dislike/like item. Furthermore, four manifest variables are enough to capture a latent construct, and in this study, we considered at least four items to measure the latent affect variable.

A key aspect to consider in cross-cultural studies concerns the tools used to collect and analyze the data. Researchers usually ask respondents to indicate their preference on a pre-determined scale. However, respondents may interpret and use such scales differently (e.g. de Jong et al., 2008). We can refer to such tendencies as "response styles". Response styles distort the measurement of the underlying constructs leading to biases and possibly failure to detect differences or similarities amongst groups of respondents. This problem may be even more pronounced in cross-cultural studies, as response styles tend to be associated with culture (van Rosmalen et al., 2010).In our analysis we apply constrained dual scaling for detecting response styles (Schoonees, et al., 2015). By doing so, we are able to detect and also to correct the observed response styles.

4.   Analyses

The internal reliability of the different constructs was measured using Cronbach's Alpha. The constructs reflected acceptable or good reliability levels with Cronbach's alphas between 0.60 and 0.90 (affect descriptive statistics can be consulted in Table 1).

Table 1: Means (and Standard deviations) for affect scores by country

	Portugal			Spain			Netherlands			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total [min-max]
AFFECT_K_2	0.329 (0.223)	0.261 (0.228)	0.293 (0.228)	0.287 (0.246)	0.258 (0.235)	0.268 (0.238)	0.2 (0.25)	0.172 (0.275)	0.189 (0.259)	0.268 (0.246)	0.242 (0.243)	0.254 (0.244) [-0.714-0.788]
AFFECT_U_2	-0.011 (0.151)	-0.008 (0.147)	-0.01 (0.149)	-0.029 (0.154)	0.002 (0.149)	-0.009 (0.151)	0.006 (0.151)	-0.05 (0.147)	-0.015 (0.151)	-0.01 (0.152)	-0.012 (0.149)	-0.011 (0.150) [-0.557-0.421]
AFFECT_ABS_2	0.059 (0.17)	0.024 (0.188)	0.041 (0.18)	0.03 (0.223)	-0.017 (0.19)	0 (0.203)	0.029 (0.19)	-0.042 (0.238)	0.003 (0.211)	0.039 (0.194)	-0.008 (0.201)	0.014 (0.199) [-0.576-0.534]
AFFECT_CUL_2	0.183 (0.18)	0.16 (0.172)	0.17 (0.176)	0.136 (0.209)	0.15 (0.197)	0.145 (0.201)	0.127 (0.182)	0.078 (0.192)	0.109 (0.187)	0.148 (0.19)	0.139 (0.19)	0.143 (0.190) [-0.533-0.670]
AFFECT_ORG_2	0.236 (0.233)	0.195 (0.217)	0.214 (0.225)	0.22 (0.208)	0.256 (0.239)	0.243 (0.229)	0.152 (0.258)	0.147 (0.22)	0.15 (0.244)	0.2 (0.239)	0.215 (0.232)	0.207 (0.235) [-0.691-0.810]
AFFECT_K_ABS_2	0.234 (0.227)	0.158 (0.287)	0.194 (0.262)	0.212 (0.34)	0.116 (0.31)	0.15 (0.324)	0.145 (0.275)	0.077 (0.376)	0.12 (0.317)	0.194 (0.283)	0.122 (0.317)	0.156 (0.303) [-0.728-0.888]
AFFECT_K_CUL_2	0.375 (0.258)	0.318 (0.271)	0.345 (0.266)	0.256 (0.336)	0.265 (0.3)	0.262 (0.313)	0.235 (0.277)	0.205 (0.312)	0.224 (0.29)	0.288 (0.295)	0.271 (0.295)	0.279 (0.295) [-0.863-0.888]
AFFECT_K_ORG_2	0.379 (0.361)	0.307 (0.366)	0.341 (0.365)	0.393 (0.323)	0.392 (0.362)	0.393 (0.348)	0.219 (0.418)	0.233 (0.348)	0.224 (0.393)	0.322 (0.381)	0.333 (0.365)	0.328 (0.372) [-1.012-0.905]
AFFECT_U_ABS_2	-0.116 (0.19)	-0.109 (0.194)	-0.112 (0.191)	-0.152 (0.196)	-0.149 (0.194)	-0.15 (0.194)	-0.087 (0.188)	-0.162 (0.208)	-0.115 (0.198)	-0.115 (0.192)	-0.139 (0.197)	-0.128 (0.195) [-0.747-0.427]
AFFECT_U_CUL_2	-0.01 (0.186)	0.001 (0.164)	-0.004 (0.175)	0.016 (0.203)	0.036 (0.2)	0.029 (0.201)	0.018 (0.2)	-0.049 (0.188)	-0.007 (0.198)	0.008 (0.196)	0.008 (0.189)	0.008 (0.192) [-0.577-0.744]
AFFECT_U_ORG_2	0.092 (0.195)	0.084 (0.189)	0.088 (0.191)	0.047 (0.198)	0.119 (0.211)	0.094 (0.209)	0.086 (0.206)	0.062 (0.179)	0.077 (0.197)	0.077 (0.2)	0.096 (0.199)	0.087 (0.200) [-0.576-0.714]

Respondents typically interpret and use rating scales differently (e.g. de Jong et al., 2008). Response styles distort the measurement of the underlying constructs, leading to biases and possibly failure to detect differences or similarities amongst groups of respondents. As they tend to be associated with culture, this problem is likely to influence our analysis of logo perception among countries. Rather than submitting the raw data to our statistical methods, we first "clean" the data using constrained dual scaling of successive categories (CDS; Schoonees et al., 2015). CDS is a non-parametric method that can be used to detect and correct for response styles. In CDS, the original rating data are transformed to rank order data that include the rated items as well as so-called boundary points. The optimal scaling values for the boundaries are then constrained to response style functions using monotonic quadratic splines. Four typical response style patterns are: 1) Acquiescence, the tendency to use mostly higher ratings, 2) Disacquiescence, the tendency to predominantly use the lower ratings, 3) Midpoint responding, the tendency to predominantly use the middle of the ratingscale,and4) Extreme responding, overuse of

the endpoints of the rating scale. In CDS, optimal scaling values for the items are determined in such a way that similarly evaluated items receive similar scale values, whereas items that are differently evaluated receive different scale values. CDS can detect segments of respondents corresponding to different response styles, and fit different response styles for each segment. Then, the original data can be purged of the response style effects resulting in "clean" data.

We detected two approximately equal sized segments with different response styles. In one segment, there appeared to be a tendency to disaquiescence, whereas the other segment corresponds to a midpoint response style. We found that there is little difference in the distribution for Spain and Portugal, both being approximately evenly distributed over the response styles. However, for the Dutch respondents, the midpoint response style appears to be used more often than the disaquiescence. As the response styles are related to the countries, failing to correct for this would affect our analysis. We therefore purge the response style effects, and analyze the "clean" data.

We used MANOVA to evaluate the influence of knowledge and naturalness of logo design on affect considering country and gender as between-subject factors and age as covariate. Effect sizes were measured using Cohen's d and partial eta squared (η_{2p}). Furthermore, we considered Pearson correlations to measure the correlations between the different dimensions and used as significance level of 0.05.

5. Results

Results are very consistent regarding the effect of the naturalness of logo design on affect towards logos. Indeed, naturalness has a main effect on affect towards logos ($F_{(2,655)} = 73.19$, $p<.001$, $\eta_p^2==0.101$).These results support H1. Natural designs increase affect cross-cultures, suggesting that this design dimension is critical in different cultural contexts. Affect is significantly higher for organic logos designs, followed by cultural logo designs and lastly by abstract logo designs (all p's <.001). Thus, findings provide support for H2 by demonstrating that organic logo designs are the ones that trigger more positive affective responses, followed by cultural designs. Abstract logos always elicit less positive affective responses.

We found significant interaction effects between knowledge and naturalness ($F_{(2,655)} = 6.13$, $p = 0.002$, $\eta_p^2==0.009$). Organic logo designs have a significantly higher level of affect than cultural designs and cultural logo designs have a significantly higher level of affect than abstract designs, independently of the logos being well-known or unknown. Hence, findings show that the distinction between the different types of natural logo designs is relevant both for well-known and unknown brands/logos.

We found an interaction effect between naturalness and country ($F_{(4,655)} = 5,28$, $p<.001$, $\eta_p^2==0.016$). For abstract logos no differences between countries were found ($F_{(2,659)} = 2,95$, $p = 0,053$). Regarding cultural logos, significant differences were obtained between The Netherlands and Portugal ($F_{(2,659)} = 5,42$, $p = 0,005$; Bonferroni post hoc test $p<.01$). Portuguese respondents evaluate cultural logos more favorably than Dutch respondents do. With respect to organic logos, significantly different affect scores were also obtained ($F_{(2,659)} = 8,78$, $p<.001$). Dutch respondents seem to denote a significantly lower level of affect towards organic logos than Portuguese($p=0.017$) and Spanish participants ($p<0.001$). We did not find support for H3.2, since abstract designs are similarly evaluated in the three countries. However, our results suggest that culture does have some influence. Indeed, results are in line with H3.1, providing empirical evidence that higher uncertainty avoidance cultures, like Portugal and Spain, find organic designs more attractive than lower uncertainty avoidance ones. Significant triple interaction effects were detected between knowledge, naturalness and country ($F_{(4,655)} = 5,88$,

p<.001, np2=0,018) For known logos, the Dutch appear to prefer cultural designs; when the logo is unknown, organic designs are preferred. In Portugal and in Spain, organic logo designs are always preferred, thus in these countries an organic design is always the ideal. In The Netherlands, a new brand with an organic logo design will be favored. However, with time, cultural logo designs are preferred.

6.   Conclusion

One of the most critical questions for managers of global brands is how to manage these brands most effectively in different countries (Solberg, 2002). Since logos are the most common brand identity sign to be used unchanged when brands go abroad (Kapferer, 2008), it is particularly relevant to focus on this identity sign. The results of this study have important implications in this respect. Our findings suggest the universal appeal of natural logo designs. The fact that natural logo designs are unconstrained by culture, allows managers to choose their logos based on this critical design dimension and increase positive affect across cultures. Hence, for managers of brands operating in different countries and aiming to maintain a consistent brand image, our findings indicate that a standardized logo is most effective.

Moreover, in respect to different categories of logo designs, results show that organic designs are always preferred and that abstract designs are the ones that induce the lowest level of affect. These preferences also hold across cultures. Furthermore, affect towards unknown organic logos is similar to affect towards well-known abstract logos, both in The Netherlands and in Spain. This finding suggests that unknown brands with aesthetically pleasing logo design elicit an identical affective response to well-known brands with less pleasing, abstract logo designs, and highlights the added value of using organic logo designs for branding purposes.

Even though, our results support the idea of a universal appeal of natural logo designs, culture does have some effect. Indeed, results suggest that higher uncertainty avoidance cultures find organic designs more attractive than lower uncertainty avoidance cultures. Thus, in these cultures the positive effects of organic designs are even more salient. When global managers prepare to launch their brands in cultures that feel more uncomfortable with uncertainty, they should consider incorporating in their visual identity elements from the natural world in order to achieve maximum positive affect. Furthermore, given the preference for well-known cultural designs in lower uncertainty avoidance cultures, it may be wise for companies to consider the introduction of cultural elements in their brand logos when they need to reposition their brands in these cultures.

Finally, from a methodological perspective, our results are based on the analysis of the "clean" data. The CDS solution with two response styles was stable within and across the two studies. Moreover, the two detected response styles indicated clear differences of scale use in the two groups and were related to the nationality of the respondents. Hence, failing to account for these effects would difficult a cross-national comparison.

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