WEB SITE BRAND ATTRIBUTES AND E-SHOPPER LOYALTY
A Comparative Study of Spain and Scotland

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Abstract: This study examines the impact of web site brand personality, web site brand association, web site brand image, and web site brand relationship on e-shopper loyalty to the web site. The model was estimated on data from consumers of online products in Spain and Scotland using PLS technique. The findings suggest that web site brand association and web site brand personality are good predictors of web site brand image. However, web site brand image does not explain the intention of Spanish students to recommend a web site and to use it to by again.

1 INTRODUCTION

Brands are important sources of competitive advantage. Therefore, knowing how actual and potential clients perceive a brand is fundamental information for its management. In brand theory, a brand is said to have attributes such as brand personality, brand association, and brand image to which brand knowledge is always linked (e.g., (Aaker, 1991; Keller, 1993, 1998)). Some authors defend that consumer-brand relationship depends largely on the successful establishment of brand knowledge (Keller, 2003).

Brand knowledge can be formed directly from a consumer's experience. Therefore, brand attributes might be crucial mediators between brand experience and consumer-brand relationship. If such a relation proves, understanding the way these concepts interrelate with each other might be valuable to inform marketing strategy formulation, namely, in what concerns brand management.

The main objective of this work is to study the direct impact of web site brand relationship and web site brand image on loyalty. In addiction, we also study the direct effect of web site brand association and web site brand personality on web site brand image. The model was estimated on data from 195 consumers of online products from two countries, Scotland and Spain, using PLS technique.

To the best of our knowledge, this is the first time that web site brand knowledge, mediated by attributes like web site brand association, personality, image, and relationship, is addressed in such a way and the study differs from previous work which has related brand knowledge of goods and services (Bart, Shankar, Sultan, & Urban, 2005; Chang & Chieng, 2006), sold through virtual stores (web site) or physical stores. Secondly, this study focuses on consumers' experiences in two European countries with very different levels of Internet use for shopping.

Given the paucity of cross-country studies in this area, using PLS (Partial Least Squares) might prove to be valuable to considerably advance existing knowledge and enhance current practices of web use for retailing.

2 LITERATURE REVIEW

2.1 Constructs Definition

Brand image is defined here as perceptions about a brand as reflected by the brand associations held in consumer memory (Keller, 1993).

Brand personality is defined as the set of human characteristics associated with a brand (Aaker, 1997). It is a comprehensive concept, which includes

all the tangible and intangible traits of a brand, such as beliefs, values, prejudices, features, interests, and heritage. A brand personality makes it unique. Brand personality is seen as a valuable factor in increasing brand engagement and brand attachment, in much the same way as people relate and bind to other people. Researchers have proposed that brand personality is an aspect of brand image (Keller, 1993, 1998; Plummer, 2000) and results from empirical studies indicate that brand personality have a statistically significant positive influence on brand image (O'Cass & Lim, 2001).

According to previous studies (Chang & Chieng, 2006; Keller, 1998), brand association is defined as the information linked to the node in memory. This information reflects an association between a range of aspects and the brand in the mind of the consumer. Brand associations have been presented as critical components in developing a brand image (Keller, 1993) and empirical studies have shown that brands associations lead to the formation of a distinct brand image in the minds of consumers (Hsieh, 2002).

In this study brand relationship is defined as the tie between a person and a brand that is voluntary or is enforced interdependently between the person and the brand (Chang & Chieng, 2006). A relationship between the brand and the consumer results from the accumulation of consumption experience.

Finally, loyalty is the intention to recommend a product to other people and to buy it again (Zeithaml, Berry, & Parasuraman, 1996).

In this work, the above concepts are transposed to the context of web site brand. We postulate that web site brand personality, web site brand association, web site brand image, and web site brand relationship all hold different information that link to web site brand, as happens with other products (Aaker, 1991). Furthermore, we defend that brand personality, brand association, brand image, and brand relationship are antecedents of loyalty to a web site brand (Chang & Chieng, 2006; O'Cass & Lim, 2001).

2.2 Structural Equations Explained

A structural equation model approach using Partial Least Squares (PLS) (Ringle, Wende, & Will, 2005) is used to test the hypotheses of this study. PLS is based on an iterative combination of principal components analysis and regression, and it aims to explain the variance of the constructs in the model. In terms of advantages, PLS simultaneously estimates all path coefficients and individual item loadings in the context of a specified model, and as a result, it enables researchers to avoid biased and inconsistent parameter estimates. Based on recent developments (Chin, Marcolin, & Newsted, 2003), PLS has been found to be an effective analytical tool to test interactions by reducing type II error. By creating a latent construct which represents the interaction term, a PLS approach significantly reduces this problem by accounting for the error related to the measures. In fact, PLS models are based on prediction-oriented measures, not covariance fit like covariance structure models developed by Karl Jöreskog, or LISREL program developed by Jöreskog and Sörborn.

LISREL estimates causal model parameters aiming at minimizing the discrepancies between the initial empirical covariance data matrix and the covariance matrix deduced from the model structure and the parameter estimates (Barclay, Higgins, & Thompson, 1995). PLS seeks to maximize variance explained in constructs and/or variables, depending on model specification. In addition, LISREL offers a number of measures of overall model "fit" such as the χ^2 goodness-of-fit, which are related to the ability of the model to account for the sample covariance. PLS does not possess these kind of overall fit measures, relying instead on variance explained (i.e., R^2) as an indicator of how well the technique has met its objective (Barclay et al., 1995). In spite of that, there are several fit indices available on PLS software (Ringle et al., 2005) such as communality and redundancy measures and Stone-Geisser's Q^2 measure, which can be used to evaluate the predictive power of the model.

As a substitute to parametric global goodness of fit measures that are used in LISREL technique, the geometric mean of the average communality (outer model) and the average R^2 (inner model) (going from 0 to 1) has been proposed (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005) as overall goodness of fit (GoF) measures for PLS (Cross validated PLS GoF), according to equation (1).

$$GoF = \sqrt{\overline{communality} \cdot \overline{R^2}} \qquad (1)$$

2.3 Hypothesis Proposed

Five hypotheses are formulated in this study and tested with PLS:

H1: Web site brand personality significantly and positively influences web site brand image

H2: Web site brand association significantly and positively influences web site brand image

H3: Web site brand image significantly and positively influences web site brand relationship

H4: Web site brand image significantly and positively influences consumer loyalty

H5: Web site brand relationship significantly and positively influences consumer loyalty

3 METHODS

3.1 Participants and Procedure

The surveys were conducted in June 2008 through face-to-face interviews in universities in Spain and Scotland. The same two interviewers, specially trained, were used in the two countries. We choice Spain and Scotland to consider different cultural contexts. We collected 95 completed questionnaires from students in Spain and 100 from students in Scotland. Each sub-sample has the same average age of 24 years. The respondents split almost equally in terms of gender for both countries.

In this study, the web site brands involved belong to different industry branch, such as: clothes, books, music, and airlines.

3.2 Measures

Web site brand association was measured using two dimensions (product and organization) (Barclay et al., 1995; Carmines & Zeller, 1979). Web site brand personality was operationalized using 5 dimensions (sincerity, excitement, competence, sophistication, and ruggedness) (Aaker, 1997), web site brand image with 3 dimensions (function, experience, and symbolic) (Chang & Chieng, 2006; Keller, 1993), web site brand relationship with 6 dimensions (functional, love, commitment, attachment, self-connection, and partner quality) (Chang & Chieng, 2006), and loyalty with 2 dimensions (recommend and by again) (Zeithaml et al., 1996). Each statement of the questionnaire was recorded on a 5-point Likert scale (1=strongly disagree, 5=strongly agree). The instrument was elaborated in English and translated to Spanish using a dual focus method (Erkut, Alarcón, Coll, Tropp, & Garcia, March 1999).

3.3 Data Analysis

The PLS model is analyzed and interpreted in two stages. First, the adequacy of the measures is assessed by evaluating the reliability of the individual measures and the discriminant validity of the constructs (Hulland, 1999). Then, the structural model is appraised.

Composite reliability is used to analyze the reliability of the constructs since this has been considered a more exact measurement than the Cronbach's alpha (Fornell & Larcker, 1981). To determinate convergent validity, we compute the average variance of manifest variables extracted by constructs (AVE) that should be at least 0.5, indicating that more variance is explained than unexplained in the variables associated with a given construct. To assess discriminant validity we follow the rule that the square root of AVE should be greater than the correlation between the construct and other constructs in the model (Fornell & Larcker, 1981).

Bootstrap (a nonparametric approach) is used to estimate the precision of the PLS estimates and support the hypotheses. Accordingly, 500 samples sets were created in order to obtain 500 estimates for each parameter in the PLS model. Each sample was obtained by sampling with replacement to the original data set (Chin, 1998; Fornell & Larcker, 1981).

Finally, the differences between the Scottish and the Spanish samples are compared using a t-test of m+n+2 degrees of freedom (where m=Spain sample size and n=Scotland sample size). This test uses the path coefficients and the standard errors of the two structural paths calculated by PLS with the samples of both countries, according to equation (2).

$$t = \frac{(\beta_{Spain} - \beta_{Scotland})}{Sp \, x \sqrt{\left(\frac{1}{m} + \frac{1}{n}\right)}}$$ (2)

$$Sp = \sqrt{\left[\frac{(m-1)^2}{(m+n-2)} x \, SE^2_{Spain} + \frac{(n-1)^2}{(m+n-2)} x \, SE^2_{Scotland}\right]}$$

4 RESULTS

All the loadings of reflective constructs approach or exceed 0.707 (Table 1), which indicates that more than 50% of the variance in the manifest variable is explained by the construct (Carmines & Zeller, 1979), except for the construct brand personality and brand relationship. Ruggedness, functional, attachment, self connection and partner quality were eliminated from the Scottish sample. Results in Table 1 shows that all constructs are reliable since the composite reliability values exceed the threshold of 0.7 and even the strictest one of 0.8 (Nunnally, 1978).

The measures also demonstrate convergent validity and discriminant validity (Table 2), according to the criteria defined in Methods.

The structural results for Spain are presented in Figure 1. All the path coefficients are found to be significant at the 0.001 level and all the coefficients' signs are in the expected direction, excepting for the causal order between brand image and loyalty.

Multiplication of the Pearson correlation value for the path coefficient value of each of the two constructs reveals that 49.4% of the brand image variability is explained by brand association, 34.1% of the brand relationship variability is explained by brand image, and 18.6% of the loyalty variability is explained by brand relationship.
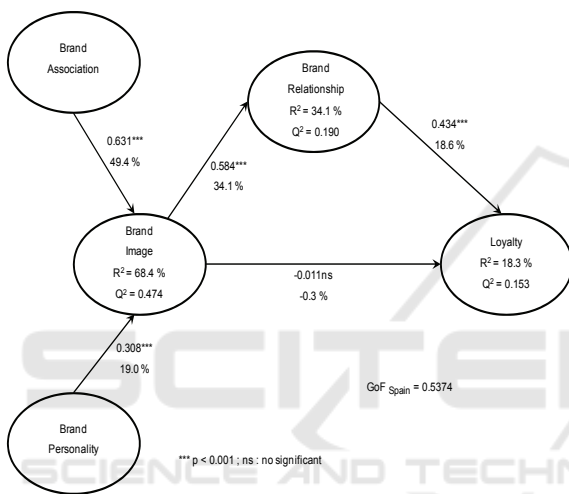

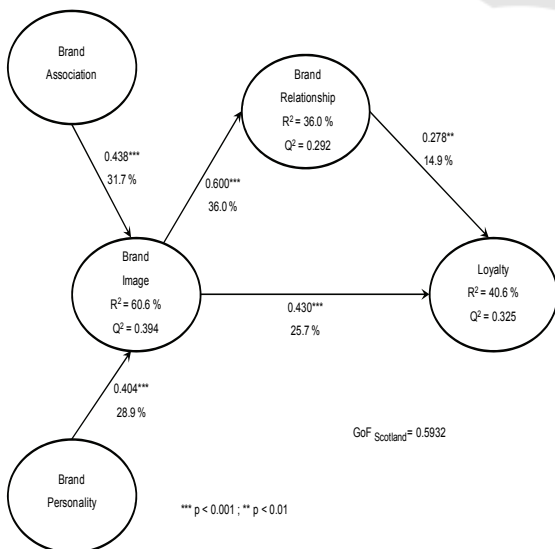Figure 1: Structural results for Spain.

Figure 2: Structural results for Scotland.

Table 1: Measurement Results.

Variable	LV Index Values	Item Loading	Composite reliability	AVE
Spain				
Brand association	3.5		0.843	0.729
AS1:Product		0.909		
AS2:Organization		0.795		
Brand personality	3.4		0.901	0.646
PS1:Excitement		0.822		
PS2: Sophistication		0.763		
PS3: Ruggedness		0.802		
RS4:Sincerity		0.793		
RS5: Competence		0.836		
Brand Image	3.3		0.874	0.698
IS1: Function		0.777		
IS2: Experience		0.889		
IS3:Symbolic		0.837		
Brand Relationship	2.8		0.903	0.609
RS1:Functional		0.710		
RS2:Love		0.867		
RS3:Commitment		0.833²		
RS4:Attachment		0.744²		
RS5:Self Connection		0.727		
RS6:Partner quality		0.789		
Loyalty	3.8		0.949	0.903
LS1:Recommendation		0.967		
LS2:By again		0.933		
Scotland				
Brand association	3.6		0.954	0.912
ASc1:Product		0.954		
ASc2:Organization		0.956		
Brand personality	3.3		0.886	0.682
PSc1:Excitement		0.880		
PSc2: Sophistication		0.730		
PSc3: Sincerity		0.837		
PSc4: Competence		0.799		
Brand Image	3.2		0.867	0.686
ISc1: Function		0.781		
ISc2: Experience		0.837		
ISc3:Symbolic		0.864		
Brand Relationship	2.8		0.902	0.821
RSc1:Love		0.891		
RSc2:Commitment		0.927		
Loyalty	3.6		0.868	0.768
LSc1:Recommendation		0.921		
LSc2:By again		0.830		

The structural results for Scotland are presented in Figure 2. All the path coefficients are significant at the 0.001 level and all the coefficients' signs are also in the expected direction, excepting for the causal order between brand relationship and loyalty which is significant at the 0.01 level. As in the Spanish sample, the Bootstrap approach with n = 500 was used and all the hypothesized relations were supported. Multiplication of the Pearson correlation value for the path coefficient value of each of the two constructs reveals that 31.7% of the brand image variability is explained by brand association, 36.0% of the brand relationship variability is explained by

Table 2: Discriminant validity: square root of AVE and correlations of constructs.

Correlations of constructs					
Construct	Brand association	Brand image	Brand perso nality	Brand relations hip	Loyalty
Spain					
$AVE^{1/2}$	0.96	0.83	0.81	0.91	0.88
Brand association	1.00	0.72	0.71	0.47	0.50
Brand image	0.72	1.00	0.71	0.60	0.60
Brand personality	0.71	0.71	1.00	0.55	0.54
Brand relationship	0.47	0.60	0.55	1.00	0.54
Loyalty	0.50	0.60	0.54	0.54	1.00
Scotland					
$AVE^{1/2}$	0.85	0.84	0.80	0.78	0.95
Brand association	1.00	0.78	0.49	0.43	0.31
Brand image	0.78	1.00	0.62	0.58	0.24
Brand personality	0.49	0.62	1.00	0.60	0.46
Brand relationship	0.43	0.58	0.60	1.00	0.43
Loyalty	0.31	0.24	0.46	0.43	1.00

Table 3: Results of multi-group analysis: Spain and Scotland.

Structural paths	Standard error Spain	Standard error Scotland	Sp^1	$\beta_{Spain} - \beta_{Scotland}$	t-test
Brand association → Brand image	0.098	0.095	0.950	0.192	1.414
Brand personality → Brand image	0.090	0.097	0.921	-0.097	-0.733
Brand image → Brand relationship	0.091	0.060	0.749	-0.016	-0.147
Brand image → Loyalty	0.132	0.098	1.137	-0.441	-2.709
Brand relationship → Loyalty	0.115	0.099	1.048	0.157	1.044

1 Unbiased estimator of average error standard variance

brand image, and 25.7% of the loyalty variability is explained by brand image.

The results of t-test (Table 3) show that there are not statistically significant differences between the two countries in any of the two structural paths (at critical t-value=|1.960|), excepting for the causal order between brand image and loyalty.

5 CONCLUSIONS

This study represents the first attempt to considerer the web site brand in a structural model using the PLS approach, which analyzes simultaneously the causal orders among web site brand association, web site brand image, web site brand personality, web site brand relationship, and loyalty.

The results show that web site brand association and web site brand personality are good predictors of web site brand image and that the hypotheses H1 and H2 are confirmed for the Scottish and the Spanish samples. Hypotheses H3 and H5 are also supported, but the hypothesis H4 is not supported by the Spanish sample. Thus, web site brand relationship seems to be more important than brand image in explaining the intention to recommend the web site and to buy again. The Scottish students give more importance to web site brand image than the Spanish students. However, web site brand association exercises a stronger effect on web site brand image than the web site brand personality, for the two groups of students in the different countries.

Traditionally, brand image and brand personality are different constructs. However, the PLS technique seems to give evidence of some correlation between the competence (eliminated in this analyze) of brand personality and the symbolic part of brand image.

Further directions for future work have been indicated by this first study of web site brand knowledge. The model is being redesigned to include other constructs and we are planning to extend our research to other countries, such as Brazil, USA, Germany, Portugal and Poland. With a cross-country approach we will be able to analyze the impact of culture on consumers' perception and test the effect of globalization, advancing existing knowledge and generating valuable information for decision makers, marketers and web designers.

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