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Structural Equation Modeling in Research on Brand Capital in Higher Education

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Abstract

This research is done in order to examine the role of the brand capital in higher education. For this purpose, we analyze the main contributions of the literature related to the study of the brand capital and its application in the educational sector, identifying which variables determine the brand capital in the higher education sector. Once we establish the susceptible brand capital in the higher education sector, an empirical research is done by using a questionnaire developed in Spanish language with a Likert scale of grade 5 in which 1 point means "strongly disagree" and 5 mean "strongly agree", being based on the measurement scales proposed by Aaker (1992) and Keller (1993). Thus, we have a valid sample of 690 university professors (438 of them from public institutions and 356 from private ones). The results have been obtained by using a structural equation method, showing the relevance of each variable and determining those most discriminant for university professors.

Keywords*: Brand Capital, Brand Equity, Higher Education, Structural Equation Method, University Professors*

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1. Introduction

Brands have evolved into a life experience for consumers, acquiring an emotional importance to them, that is reflected in their purchase satisfaction (Camacho, 2008). However, in the search for new forms of differentiation involving the actual creation of customer value, companies must be economically efficient (Kuster, and Aldás Vila, 2011). In the context discussed, brands can play an important role in the educational sector because in the last years universities have integrated marketing strategies and policies in its business model, both private and public (Fernández, 2002). So, there are some evidences that confirm that the marketing's theories and concepts can be applied in the educational context and, especially, in the field of higher education (Küster, 2012).

However, and as it is pointed out by the authors, the literature in this area is incoherent, still incipient, with a lack of theoretical models that reflect the particular context and the nature of the services of higher education. Because of that, in this research we contemplate two objectives, such as: (1) to analyze what it is understood as brand capital and what are its variables and determining components, talking about its application in the education sector; (2) to analyze what are the most relevant and discriminator elements of brand capital of the Higher Education Institutions, from the professors point of view.

In the same way, the elaboration of this research may be helpful for the university managers, given that they can figure out the key points in the opinions of several employees, with respect to the brand capital of their institutions and then to produce suitable strategies in order to maintain or improve the brand capital. So, with the purpose of reaching the objectives described above, we are dividing this research into two large parts: (1) review of the scientific literature regarding to our field of study, the brand capital and its key elements, as well as the exhaustive analysis of the marketing inside the education sector in Spain and (2) empirical research with university professors from Spanish universities, with the goal of decode those variables of the brand capital are more discriminator by using a structural equation method.

2. A brand capital model applied to higher education

After having revised the 7 main proposals about brand capital models done by literature and several contributions in the field of higher education, we present in Table 1 those elements shared by the authors in their models, whose cross elements have been considered key for our investigation, keeping in mind the importance of previous studies. Thus, all the authors consider four elements that, even though they are named in different ways, we understand that they have the same importance for the brand capital. These elements are: (1) brand awareness, (2) brand image, (3) perceived quality and (4) brand loyalty. These contributions, and more done by the literature, allow us to establish the following hypothesis, showed in Figure 1.

H1: The perception of brand awareness influences in the perception of brand capital among university professors.

H2: The perception of brand image influences in the perception of brand capital among university professors.

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H3: The perception of perceived quality influences in the perception of brand capital among university professors.

H4: The perception of brand loyaly influences in the perception of brand capital among university professors.

Table 1. Main elements of brand capital in higher education

Elements of Brand Capital	Tot Brand Capital Models							Proposals of Brand Capital in Higher Education
	Farquhar (1989)	Aaker (1992)	Keller (1993)	Faircloth, Capella y Alford (2001)	Yoo y Donthu (2001)	Delgado y Munuera (2002)	Buil, Martínez y De Chernatony (2010)	
BRAND AWARENESS		X	X		X	X	X	BRAND AWARENESS
Brand Recall			X					Koku, 1997; Morphew, 2001; Sevier, 2001; Toma, Dubrow y Hartley, 2005; Brunzel, 2007; Furey, Springer y Parsons, 2009; Brewer y Zhao, 2010; Pinar, Trapp, Girard y Boyt, 2014
Brand Recognition			X					
Brand Prominence			X					
Perceived Risk Reduction		X						
BRAND IMAGE	X	X	X	X	X	X	X	BRAND IMAGE
Brand as a Company		X						Smith y Ennew, 2000; Bosch, Venter, Han y Boshoff, 2006; Jevons, 2006; Hamann, Williams y Omar, 2007; Hemsley-Brown y Goonawardana, 2007; Chen, 2008; Denegri, Cabezas, Herrera, Páez y Vargas, 2009; Williams y Omar, 2009; Waeraas y Solbakk, 2009; Whisman, 2009; Gómez y Medina, 2010; Stripling, 2010; Mourad, Ennew y Kortam, 2011; Williams, Williams, y Omar, 2013; Pinar, Trapp, Girard y Boyt, 2014
Brand Associations	X		X	X	X		X	
Brand Differentiation		X						
Brand Imagination			X					
Brand Performance			X					
Brand Personality		X						
Brand Reputation		X				X		
PERCEIVED QUALITY		X	X		X	X	X	PERCEIVED QUALITY
Brand Esteem		X						Kissman y Van Tran, 1990; Ramsden, 1991; Byron, 1995; Athiyaman, 1997; Vorhies, 1997; Booth, 1999; Binsardi y Ekwulugo, 2003; Mai, 2005; Peltier, Schibrowsky y Drago, 2007; Chen, 2008; Billings, Engelberg, Curtis, Block y Sullivan, 2010; Mourad, Ennew y Kortam, 2011; Pinar, Trapp, Girard y Boyt, 2014
Brand Feelings			X					
Brand Judgements			X					
Brand Leadership		X						
Brand Popularity		X						
Brand Reviews			X					
Perceived Value		X						
Willingness to Pay More			X					
BRAND LOYALTY	X	X			X	X	X	BRAND LOYALTY
Brand Resonance			X					Nicholls, Harris, Morgan, Clarke y Sims, 1995; Nguyen y LeBlanc, 2001; Lerman y Garbarino, 2002; Helgesen, 2008; Bok, 2009; Brown y Mazzarol, 2009; Pawsan y Ganesh, 2009; Rojas, Vasquez, Kara y Cerdá, 2009; Pinar, Trapp, Girard y Boyt, 2014
Brand Trust		X						
Customer Appreciation		X						
Customer Satisfaction	X	X						
Price Premium		X						

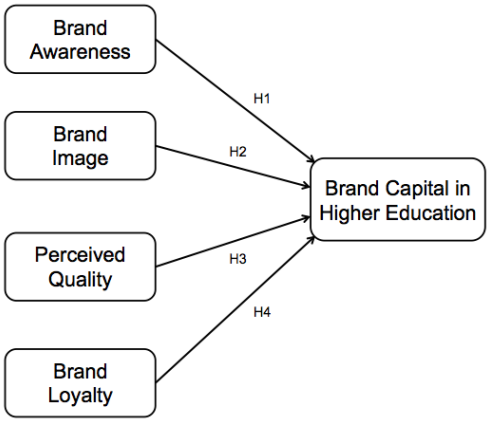

Figure 1. Theoretical model proposed for this research

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3. Methodology

In order to corroborate the established hypothesis, we accomplished an empirical research quantitative in nature, by means of a survey in Spanish aimed at a group of 438 professors from the Faculty of Economics from two public universities, and at a group of 356 from six private ones in Valencia (Spain), obtaining an amount of 690 useful surveys for our investigation.

If we base on Churchill (1979) recommendations, and in the measuring scale suggested by Aaker (1992) and Keller (1993), we can detect four segments of measurement, which are: (1) brand awareness, (2) brand image, (3) perceived quality and (4) brand loyalty. All of them have been measured with the Likert scale of grade 5 (Bozal, 2005).

The technics for the data analysis are based on the Descriptive Statistics and the Multivariate Analysis, using as a support tool the SPSS v.18 for Windows for the data descriptive techniques and the EQS 6.2 for implementing the multivariate techniques. The statistical processing followed in this research for the data implies the implementation of analysis methods dependent on the information we need to obtain, making a difference between: (1) data description and classification, and (2) hypothesis testing.

4. Results

On one hand, the scales were measured by using a confirmatory factor analysis, where all loads and t robust values were significant at $p < 0.01$ value. The reliability was checked by three methods of analysis. First, using the Cronbach Alpha (CA) and obtaining values higher than 0.70 in all cases, which helped us to accept this rule (Nunnally and Bernstein, 1994). Second, doing an analysis of composite reliability (CR) and also obtaining values higher than 0.70 (Carmines and Zeller, 1979). Finally, in order to determine the reliability, we also did an analysis of the average variance extracted (AVE), where the results were close or above to 0.50 (Fornell and Larcker, 1981).

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Table 2. Reliability and convergent validity of the scales

FACTOR	INDICATOR	LOAD	*t* ROBUST	CA	CR	AVE
Brand Awareness	BA1	0.52***	6.23	0.85	0.86	0.56
	BA2	0.81***	10.78			
	BA3	0.84***	9.99			
	BA4	0.82***	10.98			
	BA5	0.70***	8.66			
Brand Loyalty	BI1	0.63***	7.26	0.91	0.91	0.48
	BI2	0.77***	9.31			
	BI3	0.87***	13.91			
	BI4	0.75***	12.24			
	BI5	0.57***	7.14			
	BI6	0.75***	11.92			
	BI7	0.61***	8.10			
	BI8	0.41***	4.59			
	BI9	0.67***	8.71			
	BI10	0.77***	12.11			
	BI11	0.69***	8.22			
Perceived Quality	PQ1	0.77***	9.09	0.95	0.95	0.48
	PQ2	0.62***	9.79			
	PQ3	0.80***	12.74			
	PQ4	0.84***	12.34			
	PQ5	0.69***	9.31			
	PQ6	0.51***	5.70			
	PQ7	0.63***	8.35			
	PQ8	0.74***	10.70			
	PQ9	0.61***	8.75			
	PQ10	0.48***	5.61			
	PQ11	0.60***	8.04			
	PQ12	0.70***	9.58			
	PQ13	0.84***	11.94			
	PQ14	0.73***	11.47			
	PQ15	0.63***	8.05			
	PQ16	0.55***	6.77			
	PQ17	0.65***	9.66			
	PQ18	0.79***	12.96			
	PQ19	0.65***	9.27			
	PQ20	0.80***	10.70			
	PQ21	0.71***	8.08			
Brand Loyalty	BL1	0.82***	11.85	0.95	0.94	0.60
	BL2	0.87***	13.34			
	BL3	0.80***	13.80			
	BL4	0.86***	13.59			
	BL5	0.86***	15.86			
	BL6	0.63***	8.60			
	BL7	0.82***	11.43			
	BL8	0.50***	6.08			
	BL9	0.80***	12.50			
	BL10	0.81***	12.32			
	BL11	0.63***	9.67			
Brand Capital	BC1	0.41***	4.55	0.76	0.74	0.43
	BC2	0.71***	8.32			
	BC3	0.85***	12.79			
	BC4	0.59***	6.65			

On the other hand, the results suggest that the model designed in this research applied to the professors staff is satisfactory to explain the four hypotheses, obtaining a significant effect in the brand capital model proposed. Moreover, the goodness of fit statistics suggest that the structural model fits well with the data structure (S-B $\chi 2$ (p) = 5.407,353 (0,0000), df= 1.263; NFI = 0,78; NNFI = 0,81; CFI = 0,82; IFI = 0,82; RMSEA = 0,07). Moreover, we can observe in the Table 3 that the university professors give more importance to the perceived quality, followed by the brnd loyalty, the brand image and, finally, the brand awareness.

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Table 3. Validation of the proposed model

Hypothesis	Structural Relationship	β Estand.	t Robust	Result
H1	Perception of Brand Awareness --> Perception of Brand Capital	0,065***	3,37	Accepted
H2	Perception of Brand Image --> Perception of Brand Capital	0,114***	4,14	Accepted
H3	Perception of Perceived Quality --> Perception of Brand Capital	0,545***	7,49	Accepted
H4	Perception of Brand Loyaly --> Perception of Brand Capital	0,337***	6,37	Accepted

N = 690; ***p<0,01; **p<0,05; * p<0,1

Satorra-Bentler χ^2 (p) = 5.407,35 (0.0000), *df* = 1.263; NFI = 0,78; NNFI = 0,82; CFI = 0,82 ; IFI = 0,82; RMSEA = 0,07

5. Conclusions

Firstly, the profile indicates that the sample is a mixed group of men and women from public and private university (very heterogeneous sample), 40 years middle age, with responses from 9 different nationalities (Spain is the country with the highest number of responses). Moreover, there are an average of 10 years work experience, being the majority of the sample full-time workers with an average monthly salary from 2,000 and 3,000 euros (considering that over 60% of staff is studying a PhD program).

On the other hand, and observing the results of hypothesis test, we can observe that the overall model proposed show a positive and direct relationship for the 4 hypotheses. So, there is a positive relationship between perceptions of brand awareness, brand image, perceived quality, brand loyalty and brand capital

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