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Segmenting university graduates on the basis of perceived value, image and identification

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Abstract In a knowledge-based environment, public institutions and in particular universities must be able to design and implement sustainable strategies in order to become innovative service organizations. The need of a market orientation in this public context entails the identification of market segments and the use of strategies adapted to the selected targets. This study aims to identify and profile graduate segments on the basis of the relationships between three key variables in the educational context: the perceived value of the university, the university image, and the graduate identification with the institution. Given that this potential heterogeneity in the graduate market has not been explored in the literature, we try to improve the knowledge in this area by showing how these relationships may vary among segments. Using a finite mixture modeling approach, we demonstrate that perceived value and university image influence on identification through a global model. We also identify three subgroups that differ in the intensity and sign of the proposed relationships and we describe their profile. Implications and recommendations for future research and practice are discussed.

Keywords Higher education · Graduate–university identification · Perceived value · University image · Segmentation

1 Introduction

Nowadays governments have realized the importance of developing the intellectual capital of its citizens, which is a key asset in the prevailing society. On this matter, public institutions, particularly universities, have to adopt measures, which help a more suited training of professionals to social needs. For this purpose, the knowledge-based environment raises the need for a more strategic approach in the

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management of educational institutions as entities of lifelong learning (Wong 2005). These institutions must be able to design and implement training programs and appropriate teaching methodologies in order to become innovative service organizations, since they are requiring a market orientation to a society that demands this type of education. In this context, students are described as customers or stakeholders of the education system (Chung and McLarney 2000; Sakthivel and Raju 2006), recognizing it as a service industry focused on the analysis and study of the expectations and needs of their customers (Cheng and Tam 1997). Therefore, institutions/ courses are frequently now subject to the same kind of consumerist pressures typical of a highly marketised environment (Woodall et al. 2012).

In this sense, the adoption of a market orientation in universities implies that strategies must be designed focusing on the different profiles of their targets. In particular, both students and graduates are heterogeneous groups that demand different actions to be captured and to develop long-term relationships with them. Previous studies have shown that understanding the behavior of the agents involved in student–university relationships is mainly funded, among other factors, on the study of the sources of the students' perceived value (Alves 2011; Sakthivel and Raju 2006; Woodall et al. 2012) and the image of the institution (Henning-Thurau et al. 2001; Helgesen and Nesset 2007; Nguyen and Leblanc 2001). Both variables are considered key strategic determinants of intellectual, personal and professional development. On the one hand, students are increasingly demonstrating customer-like behavior and are now demanding even more 'value' from institutions (Woodall et al. 2012). Following LeBlanc and Nguyen (1999), administrators and faculty alike are attempting to revise operating procedures and review teaching methods in an effort to deliver services that promise to add value to students and industry. On the other hand, perceived image of higher education institutions play a critical role in attitudes toward these institutions (Yavas and Shemwell 1996; Landrum et al. 1998). They need to maintain or develop a distinctive image to create a competitive advantage in an increasingly competitive market (Paramewaran and Glowacka 1995). The image they portray plays a critical role in the attitudes of their public towards them (Ivy 2001) as well as in the decisions of their customers, thus having an effect on the retention of current students as in attracting potential ones (Helgesen and Nesset 2007; Landrum et al. 1998). Higher education institutions, thus, need to maintain or develop a distinct image in order to create a competitive advantage in this increasingly competitive market (Paramewaran and Glowacka 1995). Therefore, be sure of the veracity and accuracy of the image that is transmitted is necessary for these organizations.

Improving students' perception of value and positive image of an educational institution can help enhance their identification with this organization and, in turn, their attachment to the institution when they graduate. Despite the importance of these factors in the higher education context, no studies have examined them as segmentation variables to characterize the graduate market. The objective of this study is thus to identify and profile graduate segments on the basis of the relationships between perceived value, university image and identification with the institution.

Although the importance of understanding perceived value in the educational sphere has been emphasized (Ledden et al. 2007; Sakthivel and Raju 2006), value is a slippery concept, and has proven problematic in terms of its conceptualization,

methodological approach and measurement (Gallarza et al. 2011). There are only a few studies on value creation in this context (e.g. Alves 2011; Baker et al. 2002; Sakthivel and Raju 2006; Unni 2005; Woodall et al. 2012). Prior results only provide a partial vision of the efficiency of institutional mechanisms determining value creation in the context of higher education. Therefore, there has been very little research into how students evaluate value in education (Alves 2011), and this need gains importance when the changes faced by higher education institutions are considered (LeBlanc and Nguyen 1999; Alves and Raposo 2007; Brown and Mazzarol 2009). Regarding image, it has been frequently examined in the profit sector, but its analysis in the nonprofit organizations has been limited (Kazoleas et al. 2001; Arpan et al. 2003), although its importance in the educational context has been highlighted (Landrum et al. 1998; Ivy 2001; Nguyen and Leblanc 2001). The same occurs with the identification research in the educational context. Issues of corporate identification have emerged as significant research lines, but few studies have dealt with it within the higher education context (Balmer and Liao 2007; Caboni and Eiseman 2003; Ciftcioglu 2011; Mael and Ashforth 1992).

Based on these arguments, this study is innovative in that it aims to segment graduate market by using a structure of causal relationships between the three variables that have been previously discussed. In particular, we use finite mixture modeling, which has received recently attention in marketing research literature and has been considered the most appropriate technique to capture unobserved heterogeneity. This type of modeling can make a significant contribution to the implementation of segmentation strategies based on perceptual criteria, by helping universities to better understand, explain and predict cognitive–affective patterns related to graduates.

2 Literature review

2.1 The concept and nature of perceived value

The value concept is multi-faceted and complicated by numerous interpretations, biases, and emphases (Hu et al. 2009; Sánchez-Fernández and Iniesta-Bonillo 2007). Due to the difficulties arising in its analysis, the research on perceived value has remained scattered and inconclusive (Sánchez-Fernández et al. 2009). The traditional functional and utilitarian definitions of value (Dodds and Monroe 1985; Monroe 1990; Zeithaml 1988), in which consumer develop a cognitive evaluation of the overall perception of what is given and what is received, have been criticized for their failure to take proper account of the numerous intangible, intrinsic, and emotional factors that form part of the construct (Mathwick et al. 2001; Sweeney and Soutar 2001). Thus, perceived value is a broader and richer construct than a mere trade-off between "utility" and "price." Value is then defined as an "interactive relativistic preference experience" (Holbrook 1999, p. 5), considering that any consumption experience can generate functional and emotional value (Babin et al. 1994; Holbrook and Hirschman 1982; Jones et al. 2006). Studies using multi-dimensional approaches further support this view, providing cognitive–affective representations of this complex phenomena (e.g., Callarisa-Fiol et al. 2011; Cengiz and Kirhbir 2007; Holbrook

1999; Kim et al. 2012; Ryu et al. 2010; Sweeney and Soutar 2001). In particular, there have been few approaches to the study of value creation in the educational context (e.g. Baker et al. 2002; Sakthivel and Raju 2006; Unni 2005). According to Sakthivel and Raju (2006), in engineering education, perceived value is not merely transmission of technical knowledge or the degree that the student is pursuing, but something more: a value for the money that he or she has paid; he or she wants to hone leadership, communication, and interpersonal skills to acquire knowledge of the latest trends in technology, to have exposure to industrial climate, and to face challenges in life.

The transition from the cognitive approach to the study of value to the experiential cognitive–affective perspective has involved a number of changes in how consumption is viewed. In particular, the typology of value proposed by Holbrook (1999) is one of the most exhaustive and complete approaches to the value construct (Gallarza and Gil-Saura 2006; Mathwick et al. 2001; Sánchez-Fernández et al. 2009). Thus, Holbrook provided a conceptualization that uncovers four main types of value—economic (efficiency and excellence), social (status and esteem), hedonic (play and aesthetics), and altruistic (ethics and spirituality). All these value components refer to different aspects of consumption and, therefore, can be also analyzed in the educational context. In this study, we will consider this value typology but dividing the economic value into two components—the economic value of university facilities and services and the economic value of academic training—in order to adapt Holbrook's typology to our research context.

2.2 The concept of image

Several conceptualizations of image are found in the literature. It has been described as subjective knowledge, an attitude, and a combination of product characteristics that are different from the physical product but identified with it (Nguyen and LeBlanc 1998). Image has also been described as the overall impression left on the minds of customers (Nguyen and LeBlanc 2001; Zimmer and Golden 1988), taking the definition proposed by Capriotti (2006), who defines it as a mental representation of the stereotype of an object, organization, person or event.

Regarding corporate image, it is described as the overall impression made on the minds of the public about a firm (Barich and Kotler 1991; Nguyen and LeBlanc 2001). In the educational context, a higher education institution image is not absolute, but relative to the images conveyed by other institutions of higher education. The various recipients of the services provided by the universities draw conclusions about an institution's overall image from impressions they have about the strengths and weaknesses of their offerings. These images are formed from word of mouth, past experience and marketing activities of the institution. This study is focused on graduate perception.

2.3 The concept of identification

Identification has mainly been studied and applied to the relationship between the organization and their employees or stakeholders. Ashforth and Mael (1989, p. 21) defined identification as a "perception of belonging or unity with the organization",

while Dutton et al. (1994) argued that "when the individual's self-concept has the same attributes that he or she perceives in the organization's identity, a cognitive connection occurs that we define as company identification". In this regard it can be said that company identification is a specific type of social identification where the group or social category in which the individual is located is a company (Mael and Ashforth 1992). In the marketing field, research has focused on analyzing how identification turns customers into enthusiastic promoters of the company, thanks to the fact that their relationship with the company becomes so important that it even explains part of their identity. This state of maximum bond between customers and companies is called consumer–company identification (Bhattacharya et al. 1995; Bergami and Bagozzi 2000; Bhattacharya and Sen 2003; Ahearne et al. 2005).

From the works of Dutton et al. (1994) and Bhattacharya and Sen (2003), we define graduate–university identification as the degree to which graduates perceive themselves and the university as sharing the same defining attributes and values, in an attempt to satisfy one or more personal definition needs. Through this organizational identification, individuals perceive themselves as being linked with the organization. They see the organization's successes and failures as their own successes and failures. This identification has been recognized as an important factor in the wellbeing of organizational members (Brown 1969).

2.4 The influence of perceived value on graduate–university identification

The concepts of value and identification have been related in the literature under different perspectives. In organizational research, the term "value" has been linked to the concept of personal values. Thus, some studies have suggested that identification is related to the consistency between people's self-concepts and their perceptions of an organization's identity (Bhattacharya and Elsbach 2002; Cable and Judge 1996; Scott and Lane 2000). Drawing on the organizational behavior and the marketing literature, other studies have determined that consumers' identification fully mediates the impact of value congruity on brand commitment (Tuškej et al. 2013).

On the contrary, other studies have defined value as a perception or outcome of an evaluative judgment—which is the conceptualization that we will consider in our study. Under this perspective, some authors have validated the influence of organizational identification on the perceived value (Bolton and Bhattacharya 2000) in several contexts such as online communities (Dholakia et al. 2004), sport management (Kwon et al. 2007), social groups (Hogg and Abrams 1988), and cosmetic consumers (He et al. 2012). Considering the educational context, this literature can support the idea that the higher is the students' identification with their university, the higher will be their perceived value of that university.

Additionally, other studies have confirmed the contribution of different sources of perceived value to the formation of the concept of identification. Thus, Dukerich et al. (2002) showed organizational identification to be strong when members consider worthy (valuable) the central, distinctive, and enduring values and goals of the organization and incorporate these into their sense of self. Also, Millward et al. (2007) pointed out that the perceived value of electronic communication accounted for significant variance in organizational identification for all employees. In particular, several studies have focused on specific source of value, such as quality (He and

Li 2011), esteem (Balmer 2001), collectivism (Gundlach et al. 2006), hedonic value (Grappi and Montanari 2011), and prestigious (Chiu et al. 2013; Jones and Volpe 2010). In the educational context, Mael and Ashforth (1992) argued that there are several organizational and individual sources of value (e.g. sentimentality, existence of a mentor, organizational prestige, etc.) that can enhance the organizational identification. Considering this background, it can be argued that the value perception of a graduate may promote him or her identification with the university.

Although not dealing with the multidimensional concept of perceived value *per se*, we can infer from prior research that (1) students' identification with their university is positively related to their value perception of that university and, subsequently, (2) university's perceived value of a graduate can enhances his or her identification with that higher-education institution.

2.5 The influence of university image on graduate–university identification

It is coherent to believe that the way an organization is perceived by others and its image, directly affects organizational identification (Dutton et al. 1994; Ahearne et al. 2005) given that identification refers to an individual's integral perception of what a company constitutes, its personality, character and culture, based on formal and informal communications (Dutton et al. 1994), or on their prior experience (Elsbach and Bhattacharya 2001). Several studies have explored the influence of different characteristics of the organization identity that promote the satisfaction of self-definitional needs on organizational identification (Ahearne et al. 2005). Consistent with this research stream, and considering that reputation has been sometimes treated as synonymous of perceived image (Martineau 1958; Bernays 1977) and certain confusion has been identified between them in other studies (Brown et al. 2006; Gotsi and Wilson 2001; Mahon 2002), many studies have stressed that organizational prestige or reputation enhances the attractiveness of identity and organizational identification (Mael and Ashforth 1992; Bhattacharya et al. 1995; Gwinner and Swanson 2003; Kreiner and Ashforth 2004; Ahearne et al. 2005; Cornwell and Coote 2005).

Accordingly, organizational members who believe their organization has a distinctive culture, strategy, structure, or some other configuration of distinctive characteristics (i.e., the greater the distinctiveness of the image they perceive from their organization) are likely to experience strong levels of organizational identification (Dutton et al. 1994).

Based on these arguments, it seems reasonable to believe that the greater the distinctiveness of a university's image, the stronger a graduate's identification with it. Indeed, in the higher education context, Mael and Ashforth (1992) found that alumni of a religious college who perceived their university as distinctive in attitudes, values, and practices had high levels of organizational identification, in terms of a perception of oneness or belongingness to an organization. That is, the more prestigious the organization, the greater the potential boost to self-esteem through identification. Contrary to this expectation, Kreiner and Ashforth (2004) demonstrated that organizational reputation was not associated with the organizational identification of alumni of a major public university in the United States, but it was negatively related to disidentification, which occurs when an individual

defines him or herself as not having the same attributes or principles that he or she believes define the organization.

3 Method

3.1 Pretest, sample and data collection

We conducted our research in the context of higher education in Spain; in particular, we undertook the study in a public research-intensive university located in the south of this country. For our purpose, we initially assembled a questionnaire utilizing measurement items that were sourced from the existing literature and adapted to the educational context. A group of academic members with long experience and relevant academic positions revised the initial questionnaire to provide an informed opinion about it. Some modifications to the questionnaire items were made, based on the feedback we received. We then administered the preliminary draft questionnaire to a pilot test group of graduates. The questionnaire was again revised, drawing on the feedback from the pilot experiment. Next, we conducted the main survey study.

Simple random sampling was used to select a sample of 500 graduates from a database provided by the university. The database contained contact information of graduates who obtained the degree from this university 2 or 3 years before the research fieldwork was carried out. The existence of graduates from different academic years helps avoid some potential biases derived from particular circumstances associated to a specific academic course. A market research company performed the data collection using a CATI system to administer each survey. Overall, the sample resembles the universe of graduates in the selected university for the period considered. 65.4 % of the sample was women and 34.6 % were men, and 77.4 % were working on that moment. 71.4 % of the graduates who worked earned more than 1,200 euros and 28.6 % earned this quantity or less.

3.2 Measurements

To develop the survey instrument, we used multi-item scales sourced from existing literature and adapted to the context of this study. In particular, perceived value was measured by adapting previous scales developed by several authors (Holbrook 1999; LeBlanc and Nguyen 1999; Ledden et al. 2007; Sheth et al. 1991). The perceived value scale reflected the five-dimensional structure of the construct (i.e., economic value of university facilities and services, economic value of academic training, social value, hedonic value, and altruistic value). University image was measured adapting the scale developed by Nguyen and LeBlanc (2001). We used the scale proposed by Mael and Ashforth (1992) for the measurement of the construct graduate–university identification. We also included some scales measuring descriptive variables such as gender, employment status, and incomes, in order to analyze the profile of the segments once identified. All items were measured on an 11-point Likert scale in which 0 was "strongly disagree" and 10 was "strongly agree". A list of the items retained after a scale purification process can be found in Appendix.

4 Analysis and results

To develop our empirical study, we used Finite Mixture PLS (FIMIX-PLS), which is considered the most appropriate technique to capture unobserved heterogeneity from a PLS-SEM approach (Sarstedt 2008; Sarstedt et al. 2011). In particular, we used the SmartPLS 2.0 (Ringle et al. 2005) software application for the PLS path model estimation and the FIMIX-PLS analysis. The results of the estimations are reported in the following sections.

4.1 Test of outer and inner models

The standard PLS procedure was executed with the overall set of data for manifest variables as input to measure the path modeling with latent variables. Consistent with previous literature, we modeled the five components of perceived value as reflective dimensions of a second-order construct. Figure 1 illustrates the proposed model.

We followed the suggestion for a PLS model evaluation by Chin (1998). After the scale purification process, the minimum requirement for the outer measurement model was met. The outer loadings were all above 0.7, which indicated the convergent validity of the measurements. Regarding reliability, average variance extracted (AVE) and composite reliability were higher than the evaluation criteria of 0.5 for AVE, and 0.6 for composite reliability (Bagozzi and Yi 1988) for all the measurements, as shown in Table 1. Cronbach's alpha value for all the latent variables was also satisfactory.
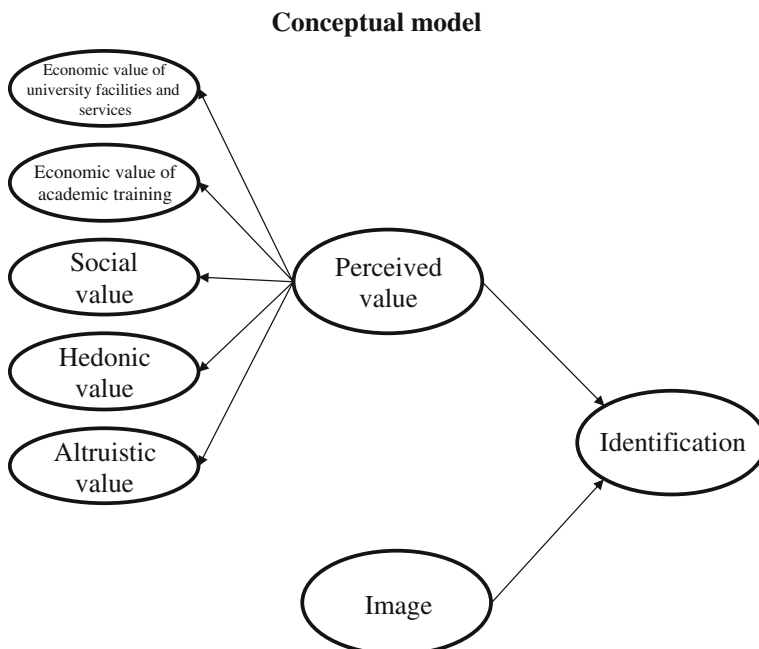

Conceptual model

Fig. 1 Conceptual model

Table 1 Reliability measurements

	AVE	Composite reliability	Cronbach's alpha	R^2	Communality	Redundancy
Identification	0.946468	0.986056	0.981137	0.122697	0.946468	0.049621
Value	0.550334	0.856419	0.788173		0.550334	
Image	0.839763	0.954189	0.935692		0.839763	

The usual goodness of fit (GoF) measure for PLS, which was proposed by Tenenhaus et al. (2005), is the geometric mean of the average communality (outer model) and the average R^2 (inner model). In our case, the GoF outcome had a value of 0.31, which indicated that it is at a moderate level. Evidence of discriminant validity was provided by the test recommended by Fornell and Larcker (1981), which refers to examining whether the square root of the AVE of each construct is greater than the correlations with other constructs (see correlation matrix in Table 2). This criterion was met for all the constructs in our model.

The proposed relationships in the inner path model are at statistically significant levels for explaining the latent endogenous variable. Table 3 provides the results of the bootstrapping procedure. Both value and image variables (weights of 0.269 and 0.109, respectively) exhibited significant relationships to the latent endogenous identification. The R^2 of identification has a value of 0.122, as shown in Table 1. This is a moderate level for PLS path models though it is greater than 0.1, which is the acceptable value recommended by Falk and Miller (1992).

4.2 FIMIX-PLS results

In the next analytical step, the FIMIX-PLS module of SmartPLS 2.0 was applied to graduate segmentation based on the estimated scores for latent variables. Following Ringle (2006), FIMIX-PLS results were computed for two classes and, thereafter, the number of K classes was successively increased. The next step was to compare estimates of the different segment solutions by means of information criteria (heuristic measures). After examining competing models, researchers must select the one that minimizes the value of the information criterion (Ringle et al. 2010). Researchers have to use a combination of criteria and simultaneously revert to logical considerations to guide the decision. In particular, Sarstedt et al. (2011) recommended as a decision rule to use the Akaike's information criterion (AIC_3) and the consistent AIC

Table 2 Correlation matrix

	Identification	Value	Image
Identification	1		
Value	0.341517	1	
Image	0.295202	0.702012	1

Table 3 Inner model results

Path	Direct effects	T statistic	*P*-value
Value → identification	0.269309	4.886497	0.00000140**
Image → identification	0.109452	1.972323	0.04914786*

*Two-tailed test; $p<0.05$

**Two-tailed test; $p<0.001$

(CAIC) jointly when evaluating FIMIX-PLS results. They also recommended the entropy criterion (EN), which is critical to assessing whether the analysis produces well-separated clusters. Finally, the estimated models for each segment were evaluated individually.

In our study, a comparison of the class-specific FIMIX-PLS computations for heuristic evaluation criteria revealed that the choice of three groups was appropriate for graduate segmentation purposes according to all relevant evaluation criteria (see AIC and CAIC values in Table 4). As discussed above, the EN statistic, which ranges from 0 to 1, indicates the degree of separation estimated in the individual class. EN values above 0.5 indicate unambiguous membership probabilities (Ringle 2006). Table 4 shows that the 0.5 threshold was almost achieved for the three-class solution (0.492), indicating a good quality of separation.

Table 5 presents the FIMIX-PLS results for three latent classes. In a large segment (size of 0.775), the explained variance of the latent endogenous identification variable was at a strong level for PLS path models ($R^2=0.822$). The variance was explained by the latent exogenous image variable, with a weight of 0.089, and the latent exogenous value variable, with a weight of 0.350. This result revealed that identification is explained to a high degree whenever perceived value is more important than image. A smaller segment (size of 0.103) had a moderate R^2 for identification (value of 0.426). The influence of the value variable does not change much for this segment. However, the weight of the image variable was higher but negative, which showed an inverse relationship between image and identification in this segment. The third segment (size of 0.121) had the lowest R^2 (value of 0.25). Results for this segment showed that image has a positive weight of 1.251, but value is negatively related to identification with a weight of −0.545.

Finally, we characterized the segments based on additional variables that we included in the questionnaire; in particular, gender, employment status, the consideration of the academic training as a key factor to find or perform a job, income, and

Table 4 Model selection statistics

	AIC	BIC	CAIC	EN
K=2	2025.7731	2055.2753	2055.2893	0.049
K=3	1929.032	1975.3927	1975.4147	0.4921
K=4	2180.643289	2243.86241	2243.89238	0.414929
K=5	2598.9023	2678.9798	2679.0178	0.2462

Table 5 Disaggregate results (solution for three latent classes)

	Segment 1	Segment 2	Segment 3
Segment size (%)	0.775257	0.103719	0.121024
R^2	0.822824	0.426425	0.255206
Value → identification	0.350415	0.472273	−0.54523
Image → identification	0.089573	−1.128887	1.251387

commitment with the university. Additionally, we performed ANOVA and contingency tables in order to test differences between segments in these variables. Results are shown in Table 6.

All segments had a higher proportion of women than men. In particular, segment 2 had the highest percentage of women (72 %). Also, the percentage of graduates who were working was superior to the percentage of graduates who were searching a work, had no job, or were not searching a work for all segments. The percentage of workers was higher for segment 1. The percentage of graduates who consider academic training as a key determinant to find or perform a job was significantly superior to the percentage of those graduates who express the opposite for all segments. In particular, segment 2 had the highest percentage of graduates who were agreed with this statement (80 %) and segment 3 had the highest percentage of individuals who manifested disagreement (37.3 %). Regarding the incomes of graduates who were working, segment 2 had the highest proportion of graduates who earned more than 1,200 euros, followed by segment 1. There are significant

Table 6 Segment composition

		Segment 1 (n=388)	Segment 2 (n=52)	Segment 3 (n=60)
Gender	Male	34.8 %	28 %	39.8 %
	Female	65.2 %	72 %	60.2 %
Have you got a job currently?	Yes	78.7 %	72 %	77.1 %
	Searching	16.1 %	21.3 %	15.7 %
	No job/no searching	5.3 %	6.7 %	7.2 %
Academic training as a key factor to find or perform a job*	Yes	71.3 %	80 %	62.7 %
	No	28.7 %	20 %	37.3 %
Income	<600 euros	3.5 %	4.9 %	7 %
	601–900 euros	6.2 %	11.5 %	5.6 %
	901–1,200 euros	18.5 %	11.5 %	18.3 %
	1,201–1,500 euros	38.6 %	39.3 %	45.1 %
	>1,500 euros	33.2 %	32.8 %	23.9 %
Commitment with the university*	Mean (11-point scale from 0 to 10)	4.98	4.83	5.84

*Significant differences between segments ($p<0.1$)

differences between segments in the variable 'commitment with the university'. Specifically, graduates in segment 3 are more committed with the university than the rest of segments (mean value of 5.84), followed by segment 1 (mean value of 4.98).

5 Discussion and conclusions

The identification of useful variables that allow determining and characterizing different segments within a higher education context is growing in importance as the need of tactics that strength the relationship between students and graduates with university is now arousing faster than ever before. In particular, given the high competition in this market, universities attempt to achieve their students and graduates become more identified with university in order to create a greater level of attachment to the institution. This study provides an innovative view about how a higher education institution can improve its market orientation by segmenting its graduate market with the aim of creating and/or adding value for these groups. We used three key variables (i.e., perceived value, image and identification) for the development of graduate–university relationship management as segmentation criteria. FIMIX-PLS served as the statistical technique for capturing unobserved heterogeneity in the graduate market of a specific university from a structural model that specified the relationships between the above variables. Results showed that the choice of three segments was the most appropriate for our purposes.

The first segment (77.5 %) is composed by graduates that attach a remarkable importance to the value generated by the university in increasing their identification with this institution. University image also influences this affective attachment, but to a lesser degree. Overall, they are people that feel moderately committed with the university and consider academic training as a key factor to find or perform a job. For this segment, persons responsible for educational planning and management might develop actions to create value such as improving academic training and services, enhancing social relationship among students through specific activities, and developing services and materials that increase ethical commitment. They also have to use image-oriented communication tools to generate a positive image of university facilities and services such as public relations, online communications, and publicity.

The second segment (10.3 %) comprises graduates whose identification with the university is influenced to a higher degree by perceived value compared to segment 1 and, consequently, the above-mentioned actions may be reinforced in this case. This is the segment that believes that academic training is a key factor to find or perform a job in a greater extent. Surprisingly, and contrary to segment 1, when graduates that belong to segment 2 perceive a negative (positive) image of the university, their level of identification increases (decreases). This may occur because this negative perception leads graduates to generate an altruistic feeling based on empathy, which in turn can align their personal values and personal identity to university identity. Similarly, when we see a distressed person, we might feel empathic distress (i.e., a vicarious feeling through empathy), which is likely transformed into empathic altruism (i.e., an

altruistic feeling including sympathy, pity, or compassion) (Hoffman 2000; Nakao and Itakura 2009). However, the fact that a positive perceived image may negatively influence identification may occur when empathy of graduates is scarce or when they do not feel inclined to bask in the reflected glory of the specific university. Although graduates in segment 2 are the least committed with their university, which is consistent with the latter explanation, further research will be necessary to assess the above arguments.

The third segment (12.1 %) includes a higher number of men compared to segments 1 and 2. This segment comprises graduates whose identification with university is strongly influenced by perceived image but moderately and negatively affected by perceived value. However, these graduates are the most committed with the university. These arguments lead us to believe that while their time at university bring them a negative perceived value, these graduates are so committed with the institution that their identification with it is high. For those who perceive high value, this leads them to be less identified with university, which means that despite the value they perceive, they do not incorporate the values and goals of the institution into their sense of self but they feel committed with it. Further research is needed to deal with this effect in depth. Given that image has more influence on identification for this group of graduates, persons responsible for educational planning and management might develop actions to increase their effort in transmitting a positive image. Image-oriented communication tools would be critical to target this audience, as discussed previously.

As this study has shown, the analysis of graduates market reveals heterogeneity on the basis of the influence of perceived value and university image on graduate–university identification. From these results, educational institutions need a better understanding of graduates differences in order to design and manage training programs, appropriate teaching methodologies and university facilities to maintain, renovate, and build a sustainable high quality living, learning and working environment as centers of lifelong learning. This should motivate marketing academics and practitioners to delve into analyses of the sources of graduate perceived value and image that are more or less strategically important than others in different situations and for different graduates according to their specific influence on identification with the organization. In particular, the inverse relationship between value and identification for some segments of graduates should be investigated, and the origin of the negative contribution of perceived image to university identification for some of them must be determined in further research. Another fruitful research opportunity concerns the deep study of relationships between university identification and other variables, going beyond the variables that have been considered in this study—for example, trust, satisfaction or quality of the interaction student–university. Moreover, new insights into the role of value and image in the improvement of the strategic activities that culminate in the offering ultimately delivered to graduates are expected in such areas as training programs and services design, positioning strategies, market-segmentation policies, integrated communication strategies, value co-creation, and so forth. Nowadays, new identification-creation opportunities should be analyzed, such as the role of social networks, the use of information and communication technologies to compensate for inefficiencies inherent in the traditional university environment, the development of public-relations strategies with different stakeholders, and

the role of emotions in the design of integrated marketing communications in the higher-education context.

Appendix

Perceived value

  Economic value of university facilities and services
- The quality of university facilities was good
- University facilities were useful
- Service quality and efficiency provided by this university was good
- Administrative and service staff at this university was efficient and good in their job
- This university had a good quality–price relationship

  Economic value of academic training
- The academic training that you received at this university had a good quality
- The academic training that you received at this university has provided value to your education
- Studying at this university was a good investment
- The academic training that you received at this university will allow you to enhance your professional career

  Social value
- The people and the environment of this university have a good image, social level and status
- You feel close to the environment and the people in this university
- Overall, your experience as a student at this university has enhanced your relationships, self-esteem and status

  Hedonic value
- You liked the experience of studying in this university
- Overall, you have enjoyed studying in this university
- You found the university's visual appearance and decoration attractive

  Altruistic value
- Studying at university is coherent with your ethical and moral values
- Studying at this university has contributed to feel good with yourself and to your self-fulfillment
- Overall, studying at this university has provided an ethical and spiritual value to you

University image
- You have a good impression of this university
- In your opinion, this university has a good image in the mind of people
- You believe that this university has a better image than its competitors
- Overall, you have a positive image of this university

Graduate–University identification
- When someone criticizes this university, it feels like a personal insult
- You are very interested in what others think about this university
- When you talk about this university, you usually say 'we' rather than 'they'
- If a story in the media criticized this university, you would feel embarrassed

References

Ahearne, M., Bhattacharya, C., & Gruen, T. (2005). Antecedents and consequences of customer–company identification: expanding the role of relationship marketing. *Journal of Applied Psychology, 90*(3), 574–585.

Alves, H. (2011). The measurement of perceived value in higher education: a unidimensional approach. *The Service Industries Journal, 31*(12), 1943–1960.

Alves, H., & Raposo, M. (2007). Conceptual model of student satisfaction in higher education. *Total Quality Management, 17*(9), 1261–1278.

Arpan, L., Raney, A., & Zivnuska, S. (2003). A cognitive approach to understanding university image. *Corporate Communications: An International Journal, 8*(2), 97–113.

Ashforth, B., & Mael, F. (1989). Social identity theory and the organization. *The Academy of Management Review, 14*(1), 20–39.

Babin, B. J., Darden, W. R., & Griffin, M. (1994). Work and/or fun: measuring hedonic and utilitarian shopping. *Journal of Consumer Research, 20*(4), 644–656.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74–94.

Baker, J., Parasuraman, A., Grewal, D., & Voss, G. B. (2002). The influence of multiple store environment cues on perceived merchandise value and patronage intentions. *Journal of Marketing, 66*(2), 120–141.

Balmer, J. M. T. (2001). Corporate identity corporate branding and corporate marketing—seeing through the fog. *European Journal of Marketing, 35*(3/4), 248–291.

Balmer, J. M. T., & Liao, M.-N. (2007). Student corporate brand identification: an exploratory case study. *Corporate Communications: An International Journal, 12*(4), 356–375.

Barich, H., & Kotler, P. (1991). A framework for marketing image management. *Sloan Marketing Review, 32*(2), 94–104.

Bergami, M., & Bagozzi, R. P. (2000). Self-categorization, affective commitment and group self-esteem as distinct aspects of social identity in the organization. *British Journal of Social Psychology, 39*, 555–577.

Bernays, F. (1977). Down with image, up with reality. *Public Relations Quarterly, 22*(1), 12–14.

Bhattacharya, C. B., & Elsbach, K. D. (2002). Us versus them: the roles of organizational identification and disidentification in social marketing initiatives. *Journal of Public Policy & Marketing, 21*(1), 26–36.

Bhattacharya, C., & Sen, S. (2003). Consumer–company identification: a framework for understanding consumers' relationships with companies. *Journal of Marketing, 67*(2), 76–88.

Bhattacharya, C., Rao, H., & Glynn, M. (1995). Understanding the bond of identification: an investigation of its correlates art museum members. *Journal of Marketing, 59*(4), 46–57.

Bolton, R. N., & Bhattacharya, C. B. (2000). Relationship marketing in mass markets. In J. N. Sheth & A. Parvatiyar (Eds.), *Handbook of relationship marketing* (pp. 327–354). Thousand Oaks: Sage Publications.

Brown, S. (1969). *Laws of form*. London: Allen and Unwin.

Brown, R. M., & Mazzarol, T. W. (2009). The importance of institutional image to student satisfaction and loyalty within higher education. *Journal of Higher Education, 57*(1), 81–95.

Brown, T., Dacin, P., Pratt, M., & Whetten, D. (2006). Identity, intended image, construed image, and reputation: an interdisciplinary framework and suggested terminology. *Journal of the Academy of Marketing Science, 34*(2), 99–106.

Cable, D. M., & Judge, T. A. (1996). Person–organization fit, job choice decisions, and organizational entry. *Organizational Behavior and Human Decision Processes, 67*(3), 294–311.

Caboni, T., & Eiseman, J. (2003). Organizational identification and the voluntary support of higher education. Annual Study of Higher Education. Oregon, Portland, November: 12–16.

Callarisa-Fiol, L. F., Moliner-Tena, M. A., & Sánchez-García, J. (2011). Multidimensional perspective of perceived value in industrial clusters. *Journal of Business and Industrial Marketing, 26*(2), 132–145.

Capriotti, P. (2006). *La imagen de empresa. Estrategia para una comunicación integrada*. Barcelona: El Ateneo.

Cengiz, E., & Kirhbir, F. (2007). Customer perceived value: the development of a multiple item scale in hospitals. *Journal of Service Marketing, 28*(3), 435–478.

Cheng, Y. C., & Tam, W. M. (1997). Multi-models of quality in education. *Quality Assurance in Education, 5*(1), 22–31.

Chin, W. W. (1998). *The partial least squares approach to structural equation modeling*. Mahwah: Lawrence Erlbaum Associates.

Chiu, C. M., Chenga, H. L., Huang, H. Y., & Chenc, C. F. (2013). Exploring individuals' subjective well-being and loyalty towards social network sites from the perspective of network externalities: the Facebook case. *International Journal of Information Management, 33*(3), 539–552.

Chung, E., & McLarney, C. (2000). The classroom as a service encounter: suggestions for value creation. *Journal of Marketing Education, 24*(4), 484–500.

Ciftcioglu, A. (2011). The relationship between perceived external prestige and turnover intention: an empirical investigation. *Corporate Reputation Review, 13*(4), 248–263.

Cornwell, B., & Coote, L. (2005). Corporate sponsorship of a cause: the role of identification in purchase intent. *Journal of Business Research, 58*, 268–276.

Dholakia, U. M., Bagozzi, R. P., & Pearo, L. R. K. (2004). A social influence model of consumer participation in network- and small-group-based virtual communities. *International Journal of Research in Marketing, 21*(3), 241–263.

Dodds, W. B., & Monroe, K. B. (1985). The effect of brand and price information on subjective product evaluations. *Advances in Consumer Research, 12*(1), 85–90.

Dukerich, J. M., Golden, B. R., & Shortell, S. M. (2002). Beauty is in the eye of the beholder: the impact of organizational identification identity and image on the cooperative behaviors of physicians. *Administrative Science Quarterly, 47*, 507–533.

Dutton, J., Dukerich, J., & Harquail, C. (1994). Organizational images and member identification. *Administrative Science Quarterly, 39*(2), 239–263.

Elsbach, K., & Bhattacharya, C. (2001). Defining who you are by what you're not organizational disidentification and the national rifle association. *Organization Science, 12*(4), 393–413.

Falk, R., & Miller, N. (1992). *A primer for soft modeling*. Akron: University of Akron Press.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 28*(1), 39–50.

Gallarza, M. G., & Gil-Saura, I. (2006). Value dimensions perceived value satisfaction and loyalty: an investigation of university students' travel behavior. *Tourism Management, 27*(3), 437–452.

Gallarza, M. G., Gil-Saura, I., & Holbrook, M. B. (2011). The value of value: further excursions on the meaning and role of customer value. *Journal of Consumer Behaviour, 10*, 179–191.

Gotsi, A., & Wilson, M. (2001). Corporate reputation: seeking a definition. *Corporate Communications, 6*(1), 24.

Grappi, S., & Montanari, F. (2011). The role of social identification and hedonism in affecting tourist re-patronizing behaviours: the case of an Italian festival. *Tourism Management, 32*, 1128–1140.

Gundlach, M., Zivnuska, S., & Stoner, J. (2006). Understanding the relationship between individualism–collectivism and team performance through an integration of social identity theory and the social relations model. *Human Relations, 59*, 1603–1632.

Gwinner, K., & Swanson, C. (2003). A model of fan identification: antecedents and sponsorship outcomes. *The Journal of Services Marketing, 17*(2/3), 275–294.

He, H., & Li, Y. (2011). CSR and service brand: the mediating effect of brand identification and moderating effect of service quality. *Journal of Business Ethics, 100*, 673–688.

He, H., Li, Y., & Harris, L. (2012). Social identity perspective on brand loyalty. *Journal of Business Research, 65*, 648–657.

Helgesen, Ø., & Nesset, E. (2007). What accounts for students' loyalty? Some field study evidence. *International Journal of Educational Management, 21*(2), 126–143.

Henning-Thurau, T., Langer, M., & Hansen, U. (2001). Modeling and managing student loyalty: an approach based on the concept of relationship quality. *Journal of Service Research, 3*(1), 331–344.

Hoffman, M. L. (2000). *Empathy and moral development: Implications for caring and justice*. New York: Cambridge University Press.

Hogg, M. A., & Abrams, D. (1988). *Social identifications: A social psychology of intergroup relations and group processes*. London: Routledge.

Holbrook, M. B. (1999). *Consumer value: A framework for analysis and research*. London: Routledge.

Holbrook, M. B., & Hirschman, E. C. (1982). The experiential aspects of consumption: consumer fantasies feelings and fun. *Journal of Consumer Research, 9*(2), 132–140.

Hu, H., Kandampully, J., & Juwahee, T. D. (2009). Relationships and impacts of service quality perceived value customer satisfaction and image: an empirical study. *The Service Industries Journal, 29*(2), 111–125.

Ivy, J. (2001). Higher education institution image: a correspondence analysis approach. *The International Journal of Educational Management, 15*(6), 276–282.

Jones, C., & Volpe, E. H. (2010). Organizational identification: extending our under-standing of social identities through social networks. *Journal of Organizational Behavior, 32*(3), 413–434.

Jones, M. A., Reynolds, K. E., & Arnold, M. J. (2006). Hedonic and utilitarian shopping value: investigating differential effects on retail outcomes. *Journal of Business Research, 59*(9), 974–981.

Kazoleas, D., Kim, Y., & Moffit, M. (2001). Institutional image: a case study. *Corporate Communications: An International Journal, 6*(24), 205–216.

Kim, S., Leeb, J. S., & Kima, M. (2012). How different are first-time attendees from repeat attendees in convention evaluation? *International Journal of Hospitality Management, 31*, 544–553.

Kreiner, G., & Ashforth, B. (2004). Evidence toward an expanded model of organizational identification. *Journal of Organizational Behaviour, 25*, 1–27.

Kwon, H. H., Trail, G., & James, J. D. (2007). The mediating role of perceived value: team identification and purchase intention of team-licensed apparel. *Journal of Sport Management, 21*(4), 540–554.

Landrum, R., Turrisi, R., & Harless, C. (1998). University image: the benefits of assessment and modeling. *Journal of Marketing for Higher Education, 9*(1), 53–68.

LeBlanc, G., & Nguyen, N. (1999). Listening to the customer's voice: examining perceived service value among business college students. *International Journal of Education, 13*(4), 187–198.

Ledden, L., Kalafatis, S. P., & Samouel, P. (2007). The relationship between personal values and perceived value of education. *Journal of Business Research, 60*, 965–974.

Mael, F., & Ashforth, B. (1992). Alumni and their alma mater: a partial test of the reformulated model of organizational identification. *Journal of Organizational Behaviour, 13*, 103–123.

Mahon, J. (2002). Corporate reputation: research agenda using strategy and stakeholder literature. *Business Society, 41*(4), 415–445.

Martineau, P. (1958). *The personality of the retail store*. Harvard Business School Press: 47–55.

Mathwick, C., Malhotra, N., & Rigdon, E. (2001). Experiential value: conceptualization measurement and application in the catalog and Internet shopping environment. *Journal of Retailing, 77*(1), 39–56.

Millward, L. J., Haslam, S. A., & Postmes, T. (2007). Putting employees in their place: the impact of hot desking on organizational and team identification. *Organization Science, 18*(4), 547–559.

Monroe, K. B. (1990). *Pricing: Making profitable decisions*. New York: McGraw-Hill.

Nakao, H., & Itakura, S. (2009). An integrated view of empathy: psychology, philosophy, and neuroscience. *Integrative Psychological & Behavioral Science, 43*(1), 42–52.

Nguyen, N., & LeBlanc, G. (1998). The mediating role of corporate image on customers' retention decisions: an investigation in financial services. *International Journal of Bank Marketing, 16*(2), 52–65.

Nguyen, N., & Leblanc, G. (2001). Corporate image and corporate reputation in customers' retention decisions in services. *Journal of Retailing and Consumer Services, 8*(4), 227–236.

Paramewaran, R., & Glowacka, A. E. (1995). University image: an information processing perspective. *Journal of Marketing for Higher Education, 6*(2), 41–56.

Ringle, C. M. (2006). Segmentation for path models and unobserved heterogeneity: The finite mixture partial least squares approach. In: *Research papers on marketing and retailing*. University of Hamburg 35 (November).

Ringle, C. M., Wende, S., & Will, A. (2005). SmartPLS 20 (beta). www.smartpls.de, Hamburg.

Ringle, C. M., Sarstedt, M., & Mooi, E. A. (2010). Response-based segmentation using finite mixture partial least squares: Theoretical foundations and an application to american customer satisfaction index data. In R. Stahlbock, S. F. Crone, & S. Lessmann (Eds.), *Data mining: Annals of information systems* (pp. 19–49). New York: Springer.

Ryu, K., Heesup, H., & Soocheong, J. (2010). Relationships among hedonic and utilitarian values satisfaction and behavioral intentions in the fast-casual restaurant industry. *International Journal of Contemporary Hospitality Management, 22*(3), 416–432.

Sakthivel, P. B., & Raju, R. (2006). An instrument for measuring engineering education quality from students' perspective. *The Quality Management Journal, 13*(3), 23–34.

Sánchez-Fernández, R., & Iniesta-Bonillo, M. A. (2007). The concept of perceived value: a systematic review of the research. *Marketing Theory, 7*(4), 427–451.

Sánchez-Fernández, R., Iniesta-Bonillo, M. A., & Holbrook, M. B. (2009). The conceptualisation and measurement of consumer value in services. *International Journal of Market Research, 51*(1), 93–113.

Sarstedt, M. (2008). Market segmentation with mixture regression models: understanding measures that guide model selection. *Journal of Targeting, Measurement and Analysis for Marketing, 16*(3), 228–246.

Sarstedt, M., Becker, J. M., Ringle, C., & Schwaiger, M. (2011). Uncovering and treating unobserved heterogeneity with FIMIX-PLS: which model selection criterion provides an appropriate number of segments? *Schmalenbach Business Review, 63*(1), 34–62.

Scott, S. G., & Lane, V. R. (2000). A stakeholder approach to organizational identity. *The Academy of Management Review, 25*(1), 43–62.

Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). *Consumption values and market choices. Theory and applications*. Cincinnati: South-Western.

Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: the development of a multiple item scale. *Journal of Retailing, 77*(2), 203–220.

Tenenhaus, M., Vinzi, V. E., Chatelin, Y. M., & Lauro, C. (2005). PLS path modeling. *Computational Statistics & Data Analysis, 48*(1), 159–205.

Tuškej, U., Golob, U., & Podnar, K. (2013). The role of consumer–brand identification in building brand relationships. *Journal of Business Research, 66*, 53–59.

Unni, R. M. (2005). Value perceptions and retention of textbooks among marketing and other business majors. *Marketing Education Review, 15*(2), 71–79.

Wong, E. (2005). Operationalization of strategic change in continuing education. *The International Journal of Educational Management, 19*(5), 383–396.

Woodall, T., Hiller, A., & Resnick, S. (2012). Making sense of higher education: students as consumers and the value of the university experience. *Studies in Higher Education*. doi:10.1080/03075079.2011.648373.

Yavas, U., & Shemwell, D. (1996). Graphical representation of university image: a correspondence analysis. *Journal of Marketing for Higher Education, 7*(2), 75–84.

Zeithaml, V. A. (1988). Consumer perceptions of price quality and value: a means-end model and synthesis of evidence. *Journal of Marketing, 52*(3), 2–22.

Zimmer, M. R., & Golden, L. L. (1988). Impression of retailing stores: a content analysis of consumer images. *Journal of Retailing, 64*(3), 265–293.