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Perceived value index in higher education

Abstract

This research aims to find an index of perceived value by students in higher education, and whether this perception is affected by age, gender, number of registrations, field of study and work experience of the students. The index was calculated based on the methodology used by the customer satisfaction indexes. Thus, a score of perceived value was calculated by estimating a structural equation model that takes into account both the antecedents of value (image and quality) and its consequences (satisfaction and loyalty). The sample used consisted of 2687 students of Portuguese public universities. The results show that on a scale of 1 to 100, the perceived value index is only 51, and that this perceived value decreases with student age and number of registrations. It was also found that the perceived value varies with the fact that students already had or not work experience and with the field of study. It was further observed that the perceived value does not vary with students' gender.

Keywords: perceived value, higher education, index.

Introduction

The higher education sector has undergone major changes throughout the world which led to increased competition for institutions in this sector (Kirp, 2003; Maringe & Gibbs, 2009). In Europe, there have been profound changes in the way university education is provided with the Bologna Agreement enabling students to move freely between European institutions of education. Also, the trends towards a declining student population and increasing budgetary constraints make the environment of these institutions highly turbulent. Thus, they increasingly need to find ways of attracting and retaining their potential and current students.

The creation of value has been identified as a means of differentiation and crucial to the creation of sustainable competitive advantage (Christopher et al., 1991; Sheth et al., 1991, Treacy & Wiersema, 1993; Heskett et al., 1994; Woodruff, 1997). For companies to be able to achieve organizational targets and objectives, they have to change emphasis in their measurements of satisfaction so as to incorporate a profound understanding as to what the client most values (Woodruff, 1997). Satisfaction reveals the level of client contentment with the respective company's products or services while value indicates which direction the company should take to achieve this satisfaction (Eggert & Ulaga, 2002). Hence, value enables managers to perceive not only just where they should allocate resources when designing a service (Cronin et al., 1997) but also to design the interlinking of services best able to achieve the desired results (Cronin et al., 2000). Correspondingly, value, as perceived by clients, should be the object of interest among both researchers and managers given how it generates

positive business consequences for companies (DeSarbo et al., 2001).

LeBlanc and Nguyen (1999) detail how there has been very little research into how students evaluate value while in education. Hence, this research aims to find an index of perceived value by students in higher education and to verify if this perception is affected by age, gender, number of registrations, field of study and work experience of the student.

1. The value concept

According to Zeithaml (1988), perceived value is the overall evaluation that the consumer makes of a product based on perceptions of that given in exchange for that which is received. Hence, value represents a trade-off between the most prominent components of that given in exchange for that received. Various other studies have also adopted this perspective on value (e.g., McDougall & Levesque, 2000; Cronin et al., 2000; Hermawan, 2001; Fornell et al., 1996).

In turn, according to Woodruff (1997, p. 142) "Customer value is a customer's perceived preference for and evaluation of those product attributes, attributing performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in usage situations". This researcher in his definition of value thus includes the way in which the client conceives value, the value desired and received as well as the connection of the product to its own consequences in terms of consumer objectives, a means-end type model. According to Payne & Holt (2001), this is the most appropriate definition to represent perceived value.

Eggert & Ulaga (2002) further included in their value definition the available alternatives, that is, client perceived value is a trade-off between the multiple benefits and sacrifices of a supplier's range, perceived by the key decision makers in the client organization and resulting in the alternatives available being taken into consideration.

A more recent and wider ranging definition of value was presented by Sánchez-Fernández & Iniesta-Bonillo (2006, p. 53) who state that “consumer value is a cognitive-affective evaluation of an exchange relationship carried out by a person at any stage of the process of purchase decision, characterized by a string of tangible and/or intangible elements which determine, and are also capable of, a comparative judgment conditioned by the time, place and circumstances of the evaluation”.

Some definitions for the value of higher education also take up this trade-off approach. For example, the value definition utilized by Hermawan (2001), LeBlanc & Nguyen (1999) and Ledden et al., (2007) suggests that the value perceived by a student is the overall evaluation made of the utility of the service based upon the perception of that which is received and that given. In turn, Brooks and Everett (2009) associate the value of education only to the targets that studying enables to be reached.

However, despite the existence of various differences and the adoption of various terms to reflect value, there are areas of agreement across the literature, in particular, that perceived value is based upon a comparison between benefits and sacrifices (Zeithaml, 1988; McDougall & Levesque, 2000; Cronin et al., 2000; Hermawan, 2001; Ledden et al., 2007), is a preferential judgment (Sánchez-Fernández & Iniesta-Bonillo, 2006), varies over time and location (LeBlanc & Nguyen, 1999; Eggert & Ulaga, 2002; Sánchez-Fernández & Iniesta-Bonillo, 2006), contains a perceptual dimension (Zeithaml, 1988; Woodruff, 1997; Eggert & Ulaga, 2002), including the objective or target the consumer seeks to attain through consumption (Woodruff, 1997; Payne & Holt, 2001), depends on individual characteristics (Bolton & Drew, 1991, Brady & Robertson, 1999) and displays a comparative character (Eggert & Ulaga, 2002; Sánchez-Fernández & Iniesta-Bonillo, 2006).

2. The relationship between perceived value and other variables

Despite the growing body of research on the value, there is still no clear understanding how the value perceived by clients interacts with other marketing variables (Eggert and Ulaga, 2002). However, for Sánchez-Fernández & Iniesta-Bonillo (2006), it is important to study the relationship between the concept of value with other variables such as quality, satisfaction, commitment and loyalty.

The study of these relationships may be clouded due to these concepts (quality, value and satisfaction) sharing some similar characteristics and are hence

difficult to distinguish between (MacDougall & Levesque, 2000). On the other hand, some researchers maintain these concepts are actually fairly distinct (Bolton & Drew, 1991; Iacobucci et al., 1995; Eggert & Ulaga, 2002). Thus, these similarities and differences render the relationship between these constructs of great importance to researchers and ensure that their appropriate utilization is of equal importance to managers seeking to maximize their company performance (Powers & Valentine, 2008).

In the position taken by Zeithaml (1988), the value concept is distinct to that of quality. In general terms, quality can be defined as the evaluation of the superiority or excellence of a product. However, the value is more individual and personal and involves a trade-off between that given and that received. Hence, while value does include quality, this may also include other factors such as prestige, convenience, among others. According to various researchers (Bolton & Drew, 1991; Sweeney et al., 1997; Caruana & Money, 1997; Cronin et al., 2000; Teas & Argal, 2000; Hermawan, 2001; Ismail & Abdullah, 2001; Hu et al., 2009), quality does represent the main antecedent of perceived value.

In turn, the concept of satisfaction also displays characteristics that distinguish it from that of perceived value (Sánchez-Fernández & Iniesta-Bonillo, 2009). The satisfaction concept is an affective construction with a post-purchase perspective, with a tactical orientation applicable to current clients and that depends on the company's range. In contrast, the concept of perceived value is a cognitive construct, pre and post-purchase, with a strategic orientation applicable to current and potential clients and which depends on both the company and competitor ranges (Eggert & Ullaga, 2002). From this research perspective, the concepts of value and satisfaction are not mutually substitutable but rather complementary. Their studies consistently show that value is an antecedent of satisfaction (Churchill and Surprenant, 1982; Fornell et al., 1996; Caruana & Money, 1997; Webb & Jagun, 1997; Cronin et al., 2000; McDougall & Levesque, 2000; Ismail & Abdullah, 2001; Eggert & Ullaga, 2002; Tam, 2004; Hu et al., 2009).

In higher education, the relationship between value and satisfaction has also been studied with the findings that student satisfaction levels were influenced by perceived value (Webb & Jagun, 1997; Hermawan, 2001; Brown & Mazzarol, 2009).

Another relationship that recently emerged in studies on the perceived value of higher education is that between perceived value and institutional image (Martensen et al., 1999; Brown & Mazzarol, 2009).

These studies concluded that image is an important antecedent of value.

The direct relationship between value and loyalty or value and behavioral intentions has also been subject to research both in education and in other service activities (e.g., Cronin et al., 1997; Cronin et al., 2000; Brown & Mazzarol, 2009). However, in higher education, the relationship between value and loyalty was found to be weak (Brown & Mazzarol, 2009).

3. Methodology

3.1. Investigation design. As detailed by DeSarbo et al. (2001), the most common approach in the literature has been to consider the value as a trade-off between perceived quality and perceived price. However, Woodruff & Gardial (1996) and Holbrook (1994) state that in the evaluation of perceived value, consumers prefer other facets of value, such as the consequences of usage. Furthermore, Sánchez-Fernández & Iniesto-

Bonillo (2006) and Eggert & Ulaga (2002) hold that perceived value should also incorporate a component generating comparisons with other objects. Still further, Sánchez-Fernández & Iniesto-Bonillo (2006) conclude that the concept of perceived value is cognitive-affective in nature.

Given the characteristics of higher education service, in particular the high level of individual involvement and its importance in current and future life of a student, it seems important to measure value perceived by the student through components of emotion and future goals beyond the trade-off component. Furthermore, also the high competitiveness that is formed between students in the labor market seems to indicate the need to incorporate an element of comparison with the alternatives when measuring value perceived by the student. Correspondingly, this research proposes the measurement of perceived value through recourse to the following components:

Table 1. Variables proposed to measure perceived value

Variables	Component
V1. The experience I have gained in this university will help me to get a good job.	Future goals
V2. Taking into consideration the price I pay (fees, charges, etc.), I believe my university provides quality of service.	Trade-off price/quality
V3. Compared with other universities, I consider that I receive quality of service for the price that I pay.	Comparison with alternatives
V4. I feel happy about my choice of university/degree	Emotion

Taking into consideration the relationship between perceived value and both its antecedents and its consequents, as reported in section 2, in addition to the interest in studying this set of

variables, the measurement of the perceived value concept was carried out in accordance with the analytical model presented in Figure 1.

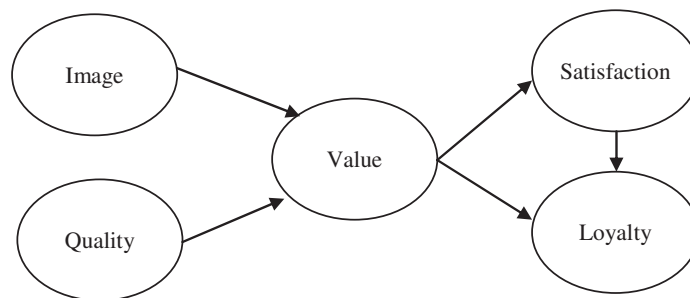


Fig. 1. Model to be tested

3.2. Sample definition. In this study, the student was considered as the main customer of the educational service. Therefore, to attain the proposed objectives, it was necessary to select a sample of higher education students. The sample was randomly selected according to criteria designed to cover students from across the diverse range of subject areas lectured at all Portuguese public universities as well as the various academic years. The final sample is made up of 2,687 students. Concerning gender, the sample is characterized by 62.6 per cent of female students and only 37.4 per cent male students. Relative to its distribution by academic area, the sample is composed

of: 26.3% study engineering, 15.7% the exact and natural sciences, 38.4% the human and social sciences, 4.3% are law students, 1.1% from the field of medical sciences, 9.1% studying education sciences and with 4.8% coming from the field of arts and letters.

3.3. Method of obtaining data. In order to attain the goals proposed in this investigation a questionnaire subdivided in six parts was elaborated: sample characteristics, image, quality of service, value, global satisfaction and loyalty. In the questionnaire, multiple item scales were used and in the scales, intervals of 1 to 10 were adopted.

To measure the perceived image attributes found in the studies conducted by Yavas & Shemwell (1996) and Landrum et al. (1998) were used. To measure perceived quality technical and functional quality attributes were based on the results and evidence found in Parasuraman et al. (1988) and Martensen et al. (1999). As to the measurement of perceived value, the attributes used resulted from those identified in the studies presented in Table 1. In the measurement of the satisfaction construct scales already tested by several researchers were used (e. g., Oliver, 1977, 1980; Oliver & Bearden, 1983; Westbrook & Oliver, 1981). Finally, to measure loyalty the attributes of Webb & Jagun (1997) and Martensen et al. (1999) were used.

3.4. Analysis of data. After gathering the questionnaires it became necessary to analyze and

interpret the data. Thus, the analysis of data was realized through structural equations using the statistical software AMOS (Analysis of Moment Structures) version 16.0 and the Maximum Likelihood (ML) estimation technique since this data allow the use if of this technique. The estimation of the model was carried out in two stages, as recommended by Anderson & Gerbing (1988). Thus, in the first stage, the measurement model is estimated, and in the second this same model is fixed, in order to estimate the structural model.

After having estimated the originally proposed model it was carried out with the estimation of the referred index, so as to analyze students' global level of perceived value, using the formula proposed by the methodology of the National Customer Satisfaction Index (Fornell et al., 1996; ECSI, 1998), i.e.:

$$\text{Satisfaction Index} = \frac{\sum_{i=1}^n w_i \bar{x}_i - \sum_{i=1}^n w_i}{9 \sum_{i=1}^n w_i} \times 100$$

where, W_i are the unstandardized weights, X_i are the measurement variables and n is the number of measurement variables.

Fig. 2. General form of the customer satisfaction index

According to Anderson & Fornell (2000), a customer satisfaction index measures the quality of goods and services as experienced by those that consume them. It represents the global evaluation of the total experience of purchase and consumption, either actual or anticipated, of a business market (Fornell, 1992; Anderson et al., 1994). This global satisfaction is an important indicator of the past, present and future performance of a business (Anderson et al., 1994).

For Dermanov & Eklöf (2001), these indexes will allow the level of customer's satisfaction to be quantified as well as making known the reasons for satisfaction or dissatisfaction; they will show where the business stands in comparison to competitors; they will also show to the management of the institution whether the efforts to improve customer satisfaction were effective or not; and, finally what are the reasons for the customers abandoning the company and what would make them stay with the company. Therefore, similarly, also an index of perceived value seems useful to organizations in general and for the higher education institutions in particular.

4. Analysis of results

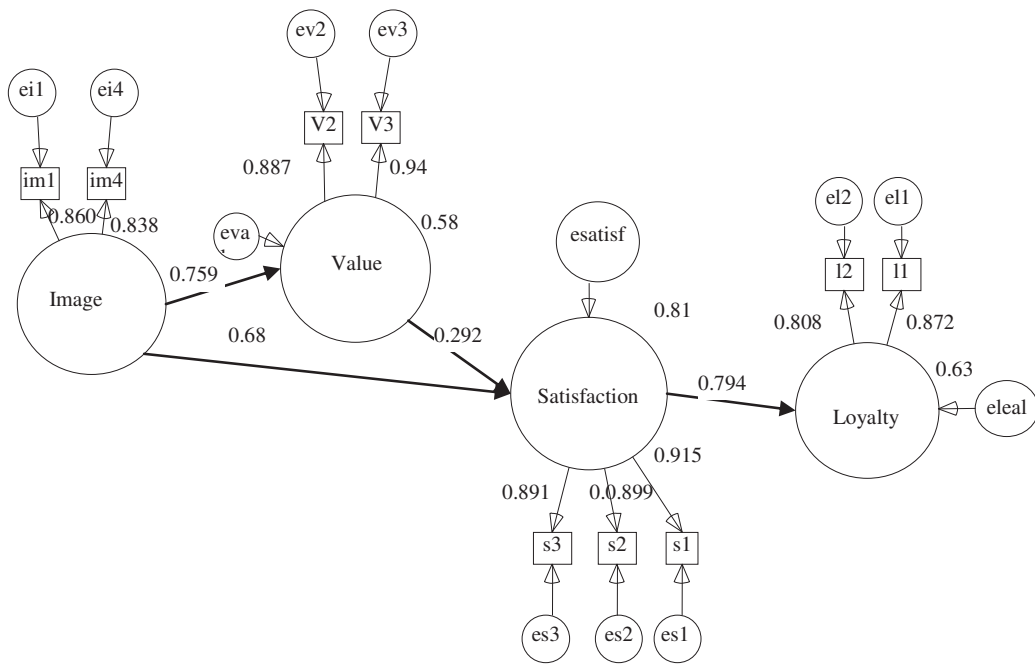
4.1. Estimation of the perceived value index of higher education. One of the main objectives of this investigation was the estimation of an index of

value perceived by the higher education student based on a model that includes its antecedents and consequences. The final estimated model is the one presented on Figure 3.

As is possible to observe in Figure 3, the final model is slightly different from the one presented in Figure 1. During the analysis a high level of correlation was found between the quality and image constructs. Given that in these situations one of the constructs should be taken out (Hair et al., 1998), analysis was made of the variance explained by the concepts within their indicators resulting in the option to remove the quality construct as this was found to contain less variance explainable by its indicators.

After having extracted the least significant indicators and the least explanatory construct, we found a model with acceptable levels of adequacy.

An analysis of the indexes presented by the final model reveals the model displays good levels of fit (GFI = 0.978, AGFI = 0.957, TLI = 0.981, NFI = 0.987, RMSEA = 0.62) and explains 97.8% of data variance, with its discriminant validity having been confirmed through the comparison of the square roots of construct average variance extracted and the correlation between each pair of constructs.



Legend:	
Indicators:	
IM1 – Good University to study in	IM4 – Provides good preparation to the students
S1 – Global level of satisfaction	S2 – Correspondence to expectations
S3 – Correspondence to needs/wishes	V3 – Price/quality compared to other universities
V2 – Price/quality	L1 – Would choose again
L1 – Would choose again	L2 – Would choose again for a post-graduation
Errors: eim1, eim4 el1, el2.	

Fig. 3. Final model

In terms of individual item reliability, Table 2 shows how all indicators are statistically significant at the 0.05 level of significance and we may thus state that all variables are significantly related to the specific concepts. Furthermore, we also found that all indicators present an estimate value in excess of 0.7, corresponding to an internal reliability value of at least 50% (Hair et al., 1998).

In relation to the internal consistency levels of each concept (reliability), Table 2 demonstrates that all concepts exceed the minimum level of 0.7 recommended by Hair et al. (1998) and Garcia & Martinez (2000), pointing to the indicators specified appropriate to representing their inherent concepts. It should also be noted that the concepts with the greatest internal reliability are those of satisfaction (92.9%) and value (91.0%).

Table 2. Standardized regression weights, reliability and extracted variance of constructs

Regression weights	Estimate	P*	Construct	Indicator	Reliability	Explained variance
IM1← Image	0.860	0.000	Image	IM1	0.838	0.721
IM4← Image	0.838	0.000		IM4		
V2← Value	0.887	0.000	Value	V2	0.910	0.835
V3← Value	0.940	0.000		V3		
S1← Satisfaction	0.915	0.000	Satisfaction	S1	0.929	0.813
S2← Satisfaction	0.899	0.000		S2		
S3← Satisfaction	0.891	0.000		S3		
L1← Lloyalty	0.872	0.000	Loyalty	L1	0.828	0.707
L2← Loyalty	0.808	0.000		L2		

Note: * For a probability level of 0.05.

In terms of convergent validity, Table 2 shows how all concepts always explain over 50% of the variance, the minimum value put forward by Hair

et al. (1998) and Garcia & Martinez 2000). The construct that explains the greatest level of variance in its indicators is the value construct.

In order to evaluate discriminant validity, analysis focused on determining the correlation between each indicator and each one of the constructs were performed with verification that all indicators correlate higher with its own construct.

After having estimated the model it was carried on with the estimation of the referred perceived value index. The formula adopted for its

calculation was the one proposed by the methodology of the National Customer Satisfaction Indexes (Fornell et al., 1996; ECSI, 1998) (see Figure 2).

As one can observe in Table 3, the global index of perceived value in the state university education, on a scale of 1 to 100, is only medium (51 points).

Table 3. Perceived value index

Index	Indicators	Non-standardized regression weights (Wi)	Indicators mean (\bar{x}_i)	$\sum Wi$	$\sum Wi * \bar{x}_i$	Index value (1-100)
Perceived value	V2	1	5.44	2.038	11.41	51
	v3	1.038	5.76			

4.2. Analysis of the perceived value index by age, gender, number of registrations, field of study and the student work experience. To see if the perceived value index varies between groups with different characteristics an analysis of the differences between the groups was performed. For the realization of that analysis the values assumed by the variable value based on estimates of the factor score¹ weights were first calculated.

The homogeneity of variance between groups for the variable in question is, according to Hair et al. (1998), one of the most important assumptions in the analysis of variance. Thus, the analysis of homogeneity of variance will be presented. All other assumptions were tested and met, although its results will not being presented here. Table 4 presents the results of Levene's test for equality of variance between groups as well as the results of the ANOVA analysis.

Table 4. Anova and Levene's test

	ANOVA AND LEVENE TEST						Levene	Sig.
		Sum of squares	df	Mean square	F	Sig.		
Field of study	Between groups	454.604	6	75.767	20.252	.000	3.276	.003
	Within groups	9948.041	2659	3.741				
	Total	10402.644	2665					
Age	Between groups	162.516	4	40.629	10.558	.000	2.972	.018
	Within groups	10274.375	2670	3.848				
	Total	10436.891	2674					
Gender	Between groups	10.820	1	10.820	2.776	.096	.232	.630
	Within groups	10215.391	2621	3.898				
	Total	10226.211	2622					
Number of registrations	Between groups	202.336	7	28.905	7.560	.000	1.820	.079*
	Within groups	10040.977	2626	3.824				
	Total	10243.313	2633					
Work experience after enrollment	Between groups	29.738	1	29.738	7.543	.006	5.174	.023
	Within groups	9729.286	2468	3.942				
	Total	9759.024	2469					

Note: * Significant trough the robust test of equality of means of Welch and Brown-Forsythe.

As shown in Table 4, after compliance with the assumption of homogeneity of variance between groups, the ANOVA results show that there are significant differences between students of different fields of study, with different ages, with different number of registrations and between the groups with and without work experience after their entry into the university.

Thus, to test which means differed most the Scheffé's test was performed, because according to Hair et al. (1998), this method is the one with greater statistical power, because it is the most conservative for the Type I error. Tables 5, 6 and 7 show the results of Scheffé's test for perceived value comparison of means for the different fields of study, for the different age groups and for the different years of registration respectively.

¹ The values of the Factor Score weights are provided by estimated model and allow calculating the values assumed by the various latent variables, taking into account the values of the indicators

used to measure these variables and the relationships established between the latent variables.

Thus, it can be seen (see table 5) that students of Arts and Letters are those who perceive less value in service education, with an average of 4.3

points, while students of Law sciences are those with a higher perceived value, averaging more than 6 points.

Table 5. SCHEFFE post hoc test for field of study groups

Field of study	N	Subset for alpha = 0.05		
		1	2	3
Arts and Letters	127	4.3124		
Exact and Natural sciences	429		5.3487	
Engineering	700		5.3517	
Human and Social sciences	1024		5.4165	
Medical sciences	29		6.2186	6.2186
Education sciences	242		6.2204	6.2204
Law sciences	115			6.4612
Sig.		1.000	.065	.988

Note: Means for groups in homogeneous subsets are displayed.

With regard to differences in age, it can be seen in Table 6 that the older students (aged over 24 years) perceive less value in service education. This may be associated with the number of

registrations of older students as shown in Table 7. That is, the fact of students failing some years leads them to see less value in education.

Table 6. SCHEFFE post hoc test for age groups

Age	N	Subset for alpha = 0.05	
		1	1
28-30	73	4.7336	
24-27	361	5.0916	5.0916
21-23	1145		5.3989
>30	85		5.4270
18-20	1011		5.7244
Sig.		.598	.071

Note: Means for groups in homogeneous subsets are displayed.

Table 7. SCHEFFE post hoc test for number of registrations

Nº of registrations	N	Subset for alpha = 0.05		
		1	2	3
+7	82	4.6789		
7	50	4.8192	4.8192	
6	120	4.9422	4.9422	
5	247	5.2498	5.2498	5.2498
4	573	5.3647	5.3647	5.3647
2	554	5.4699	5.4699	5.4699
3	586		5.6463	5.6463
1	422			5.8468
Sig.		.085	.057	.414

Note: Means for groups in homogeneous subsets are displayed.

As to whether the student already has some work experience the results also showed significant differences in the higher education value perception. Students who already experienced the job market perceive less value in the higher education service, which could indicate a mismatch between what is taught in universities and the practical life.

Conclusions

This research project sought to enable a better understanding of the value concept as well as how

this perception varies within different groups of students by estimating a perceived value index. The results showed that in the Portuguese state university education the value perceived by students is only moderate: on a scale of 1 to 100, the students' perceived value is only 51. The estimation of this perceived value index is a novelty in terms of research and constitutes a useful tool for higher education institutions, because, similar to satisfaction indexes, this index allows comparing perceived value between

different educational systems, institutions, countries or even over time.

Since perceived value was better measured by indicators like the trade-off between quality and price and that of comparison with alternatives, it is crucial for higher education institutions to dedicate efforts to conveying to students everything that they may receive and benefit from by undertaking academic studies while simultaneously seeking to reduce the perception of costs among students. This way, students can become true allies in the dissemination of positive word-of-mouth about the institution. Nevertheless, this needs to be carried out while taking into consideration the service provision of direct and substitute competitors.

It was also possible to ascertain that this value perception varies within certain students groups. Thus, it was found that the younger and inexperienced students, in terms of labor market, perceive greater value in service education. Probably because they expect that this education will provide them opportunities of future career. Since older and more experienced students can exert significant influence on these students it is important for institutions of higher education on one hand, to study the expectations of these students and try to motivate them, and on the other hand, try to approximate what is taught to the reality of the labor market.

Another conclusion was that students aspiring to get a career in the areas of law perceive greater value in service education, while the students of arts and letters are those who perceive less value in higher

education. In this sense it is important for institutions of higher education to have a bigger concern with the career placement of students of arts and letters. It was also possible to establish that the more years a student remains in college, because of failures, the lower the perceived value from it, thus requiring a much greater effort to become motivated.

Limitations and future lines of research

Despite the possible contribution this research may have in deepening our understanding of the study of student perceived value of higher education, it must also consider that it remains one of the few studies focusing on this issue in this field. Hence, it is important that other studies follow on to validate the results attained by this project.

Furthermore, one limitation to this research project is how the value construct was not studied and measured taking the quality variable as an antecedent instead given the latter proved to bear a high level of correlation with the image construct.

Lastly, this study took place within a state university environment and it would be important to repeat the study within a private higher education environment so as to ascertain possible differences or similarities in the perception of value.

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