The Measurement of Perceived Value in Higher Education: a Unidimensional Approach

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The measurement of perceived value in higher education: a unidimensional approach

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Abstract

Higher education institutions increasingly need to establish long term relationships with their clients through the provision of high value services. Hence, understanding how the provision of education is viewed by recipients along with the means to reliably measure perceived value are both fundamental. This paper deals with perceived value as a higher order construct making recourse to a unidimensional approach. The results indicate that the perceived value construct can be measured with a high degree of robustness when incorporating the trade-off between price and quality and a comparison with other alternatives. The results also show that image is an important influence on perceived value and that satisfaction is the main consequence.

Key words: Perceived value; higher education; unidimensional approach

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1. 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 and 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 and Wiersema, 1993; Heskett et al., 1994; Woodruff, 1997). 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. Nevertheless, this need carries increasing importance when taking into consideration the changes faced by higher education institutions (LeBlanc and Nguyen, 1999; Alves and Raposo, 2007; Brown and Mazzarol, 2009).

Furthermore, the importance that the education service received may have on the current and future life of an individual may lead the individual to evaluate perceived value as incorporating or displaying a preponderance of other components that are normally not present in products or services of low relevance to the consumer.

By reviewing the appropriate literature, we can see that perceived value has been approached in several different ways and that there is no consensus around the best way to measure it. Hence, this research project sought to study the value perceived by students engaged in higher education and verify the most important components for the measurement of this value and put forward a means of measurement that simultaneously studies the relationship of this construct with its precedents and consequents.

2. The Value Concept

Despite the concept of value representing the foundations of the philosophy of marketing (exchanges only exist when there is value present), the great development in studies on value only took place in the 1990s (Eggert and Ulaga, 2002). Furthermore, interest in the theme has continued (Ledden et al., 2007) particularly as many of the questions still await resolution both in terms of the definition of the concept and its relationship with other concepts (Sánchez-Fernández and Iniesta-Bonillo, 2006; Sánchez-Fernández and Iniesta-Bonillo, 2007).
The literature contains various terms deployed as synonymous with perceived value. Judgment value, shopping value, consumption value, relationship value, product value, service value, expected value, consumer value, customer value, perceived value and received value have all been utilised in the literature to designate the same concept even while still differing (Sánchez-Fernández and Iniesta-Bonillo, 2006). This terminological confusion derives primarily from the different approaches that have been taken to the study of value (Woodruff, 1997; Payne and Holt, 2001; Sánchez-Fernández and Iniesta-Bonillo, 2006). Therefore, value has been studied from the perspective of creating and supplying value to the client, from the perspective of the value of the client to the company and from the perspective of the value perceived by the client (Payne and Holt, 2001) not to mention from the perspective of the organisation’s value to its stakeholders (Woodruff, 1997).

According to Zeithaml (1988), 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 (for example: McDougall and Levesque, 2000; Cronin et al., 2000; Hermawan, 2001; Fornell et al., 1996).

In turn, according to Woodruff (1997:142) “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 and Holt (2001), this is the most appropriate definition to represent perceived value.

Eggert and 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 organisation and resulting in the alternatives available being taken into consideration.

A more recent and wider ranging definition of value was presented by Sánchez-Fernández and Iniesta-Bonillo (2006:53) which states “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 utilised by Hermawan (2001), LeBlanc and 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 and Levesque, 2000; Cronin et al., 2000; Hermawan, 2001; Ledden et al., 2007), is a preferential judgment (Sánchez-Fernández and Iniesta-Bonillo, 2006), varies over time and location (LeBlanc and Nguyen, 1999; Eggert and Ulaga, 2002; Sánchez-Fernández and Iniesta-Bonillo, 2006), contains a perceptual dimension (Zeithaml, 1988; Woodruff, 1997; Eggert and Ulaga, 2002), includes the objective or target the consumer seeks to attain through consumption (Woodruff, 1997; Payne and Holt, 2001), depends on individual characteristics (Bolton and Drew, 1991, Brady and Robertson, 1999) and displays a comparative character (Eggert and Ulaga, 2002; Sánchez-Fernández and Iniesta-Bonillo, 2006).

In this study it will be considered that the value perceived by the student is a broad concept that includes more than a trade-off between what is given and what is received and thus includes other components which may be relevant in higher education

3. Measuring the value concept

According to DeSarbo et al. (2001), the most common approach across the literature has been to consider value as a trade-off between perceived quality and the perceived price. This approach led to the studying and measuring of value as a global and uni-dimensional indicator (Sweeney et al., 1997; MacDougall and Levesque, 2000; Cronin et al., 2000; Hermawan, 2001).

Although this approach has attracted significant support (DeSarbo et al., 2001; Sánchez-Fernández and Iniesta-Bonillo, 2006), Bolton and Drew (1991) and Sinha and DeSarbo (1998) point out that the functioning of consumer value is more complex than some simple trade-off between quality and sacrifice. Sweeney and Soutar (2001) and Moliner et al., (2007) go to the extent of stating that this approach to value is overly reducive as it only focuses on the economic utility of value.

Corresponding, another approach to value has more recently emerged, the multidimensional approach measuring perceived value through recourse to various dimensions of both benefits and sacrifices (Lin et al., 2005), thus overcoming the possible shortcomings that the unidimensional approach might contain (Moliner et al., 2007).

In the view of Lin et al. (2005) and Sánchez-Fernández and Iniesta-Bonillo (2006), the unidimensional approach is effective and simple but unable to describe the complex nature of perceived value. This complexity to the concept of value is also highlighted by Sheth et al. (1991) and LeBlanc and Nguyen (1999). Furthermore, value is also handled as a multifaceted concept (Sheth et al., 1991; and LeBlanc and Nguyen, 1999; Eggert and Ulaga, 2002).

Within this framework, the multidimensional is a broader reaching vision on value that extends to include the experiential vision of perceived value and hence considering it not only as cognitive but also as affective (Moliner et al. 2007). The findings of Sheth et al. (1991) established the foundations for this multidimensional approach and set out the dimensions of value as: functional value, that is the value associated to the benefits of owning a specific product or service, social value, that is the value derived from associating with specific social groups, emotional value, related with the capacity of a
product or service to stimulate feelings or affective states towards the product or service, epistemic value, detailing the capacity of a product or service to provide novelty or satisfy a desire for knowledge and, finally, conditional value that derives from the specific contexts of each situation. The studies of Sweeney and Soutar (2001) and Moliner et al. (2007) took this approach and it was applied to the specific example of higher education by LeBlanc and Nguyen (1999), Ledden et al. (2007) and Brown and Mazzarol (2009).

In support of this multidimensional approach are instruments such as PERVAL (Sweeney et al., 1996; Sweeney and Soutar, 2001) and GLOVAL (Sánchez-Fernández and Iniesta-Bonillo, 2006). Both of these tools represent attempts to develop scales of measurement for the concept of consumer perceived value. The PERVAL scale is based on the theory put forward by Sheth et al. (1991) and following testing has been reduced from the five dimensions originally set out by Sheth et al. (1991) to three: functional, social and emotional value. This leads the functional dimension to include price versus value for money and performance versus quality. In turn, the GLOVAL scale set out by Sánchez-Fernández and Iniesta-Bonillo (2006) is founded upon both the theory of Sheth et al. (1991) and the PERVAL scale but with the addition of a component establishing the location of the product purchased. This scale thus expands the scope of its predecessor to incorporate the functional value of the installations, the functional value of contact personnel professionalism, product/service functional value quality, functional value price, emotional value and social value.

The application of the Sheth et al. (1991) scale of values to higher education was carried out by LeBlanc and Nguyen (1999) with the conclusion that the value of higher education perceived by the student derives above all from the price/quality relationship (functional value), epistemic value, in terms of teaching quality and the functional value associated with future gains and career objectives. The results also indicated that image did influence perceived value. Furthermore, emotional value and social value also registered significant results even if on a lesser scale. Ledden et al. (2007) applied to the get dimension, in higher education, the scale put forward by LeBlanc and Nguyen (1999) and the PERVAL scale was applied in higher education by Brown and Mazzarol (2009).

Despite some authors maintaining that the multidimensional approach manages to overcome some of the limitations of the unidimensional approach (Lin et al., 2005; Sanchéz-Fernandéz and Iniesta-Bonillo, 2006; Moliner et al., 2007), it has itself come in for criticism. According to Lin et al. (2005), studies structured around the concept of value measure value but also measure the give and get components. However, based on the definition of trade-off, both dimensions form part of the value concept and hence it is more appropriate to insert it integrally within the actual construct. “The relationships between give-get and value are conceptually tautological because the existence of high value perception automatically implies the existence of high get perception, or low give dimension, or both.” (Lin et al., 2005:321). According to these researchers, the abstraction of the value concept is not specified in multidimensional models and hence inconsistent with the very conceptual definition of perceived value. Hence, these models by failing to include global value prove unable to effectively reflect the true “give versus get” trade-off experience that is implicit to the construct itself. To this end, some authors (Bolton and Drew, 1991; Lin et al., 2005; Ruiz et al., 2008) state that perceived value should be handled as a high-order construct. Ledden et al. (2007) actually found
that when the concept of value is handled in this way a greater explanatory capacity ($R^2$) is achieved.

According to Lin et al. (2005), the unidimensional approach should be utilised when seeking to understand the effects of perceived value in other constructs, such as satisfaction and loyalty as in such circumstances the effects of perceived value are undergoing measurement and not their constituent components.

As regards measuring the concept of perceived value in higher education, there is only a limited range of research projects studying this concept whether as the central or as the secondary construct. Table 1 presents some of the studies that have taken up the concept of perceived value even if not always as the core study concept.

As can be seen from table 1, and to the best of our knowledge, there are relatively few studies dealing with the perceived value concept in higher education. Furthermore, we also find that that majority did adopt a multidimensional approach and as regards the variables in these studies, when aggregated, they do not attain high levels of internal consistency.

Hence, this study proposes a means of measuring the concept of perceived higher education value that will allow achieving higher levels of internal consistency of the construct when studied as a higher order construct. We here complement the approach by incorporating the relationship with its antecedents: quality (Bolton and Drew, 1991; Sweeney et al., 1997; Caruana and Money, 1997; Cronin et al., 2000; Teas and Argal, 2000; Hermawan, 2001; Ismail and Abdullah, 2001; Hu et al., 2009) and image (Martensen et al., 1999 and Brown and Mazzarol, 2009) and its consequences: satisfaction (Churchill and Surprenant, 1982; Fornell et al., 1996; Caruana and Money, 1997; Webb and Jagun, 1997; Cronin et al., 2000; McDougall and Levesque, 2000; Ismail and Abdullah, 2001; Eggert and Ullaga, 2002; Tam, 2004; Hu et al., 2009) and loyalty (Cronin et al., 1997; Cronin et al., 2000; Brown and Mazzarol, 2009).

4. METHODOLOGY

4.1. Investigation Design

According to Lin et al. (2005), when seeking to study the concept of perceived value with a level of abstraction equal to its interrelating constructs, the unidimensional approach is most appropriate. However, as set out in table 1, in higher education, thus far the unidimensional approach systematically results in lower levels of internal consistency. Hence, there is a need to identify a scale able to raise these consistency levels through a unidimensional approach.

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 and 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, Sanchéz-Fernandéz and Iniesto-Bonillo (2006) and Eggert and Ulaga (2002) hold that perceived value should also incorporate a component generating comparisons with other objects. Still further, Sanchéz-Fernandéz and 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:

Insert table 2 here

Taking into consideration the relationship between perceived value and both its antecedents and its consequents the measurement of the perceived value concept was carried out in accordance with the structural model presented in figure 1.

Insert figure 1 here

4.2. Sample Definition

The sample was randomly selected from all public universities in Portugal (14) according to criteria designed to cover students from across the diverse range of subject areas lectured at universities as well as the various academic years. The final sample is made up of 2,687 students. Concerning gender, the sample is characterised 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.

4.3. 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 as they allow the reduction in the standard error and the size of the required sample (Ryan et al., 1995), as well as measuring constructs with greater validity (Hayes, 1998; Anderson and Fornell, 2000). In the scales, intervals of 1 to 10 were adopted as the increase in the number of points in the scale allows the skewness of answers to be reduced (Fornell, 1992).

To measure the perceived image of the service the same types of scales were used and the attributes used to measure this concept resulted from the studies conducted by Yavas and Shemwell (1996) and Landrum et al. (1998). To measure perceived quality
technical and functional quality attributes were calculated 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 (for example Oliver, 1977, 1980; Oliver and Bearden, 1983; Westbrook and Oliver, 1981). Finally, to measure loyalty the attributes of Webb and Jagun (1997) and Martensen et al. (1999) were used.

4.4. Analysis of Data

The analysis of data was realised through structural equations using the statistical software AMOS (Analysis of Moment Structures) version 16.0. The Maximum Likelihood (ML) estimation technique was used since, apart from being the most used, it is also one of the methods which obtain the most efficient estimations, so long as the variables used respect the assumptions of normality (Hair et al., 1998; Garcia and Martinez, 2000), a presupposition proved in this study. The estimation of the model was carried out in two stages, as recommended by Anderson and 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. The logic behind this reasoning, according to the aforementioned authors, is that the reliability of the indicators is better represented in two stages, avoiding interaction between the measurement and structural models.

5. Analysis of Results

After these first tests of the measurement model (Confirmatory Factorial Analysis (CFA)) an elimination of the coefficients that in terms of individual reliability returned values below or very close to 0.7, the minimum levels recommended by both Hair et al. (1998) and Garcia and Martinez (2000), was performed. Following this elimination process, a high level of correlation was found for 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 measurement model with acceptable levels of adequacy. The measurement model estimation is set out in Figure 2. Tables 3 and 4 present the measures of overall and incremental adjustment to the measurement model.

An analysis of the indexes presented by the measurement model (Tables 3 and 4) reveals the model displays good levels of fit (GFI=0.982, AGFI= 0.962, TLI=0.984, NFI=0.990, RMSEA=0.058).

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In terms of individual item reliability, Table 5 shows how all indicators are statistically significant to a 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).

Insert table 5 here

In relation to the internal consistency levels of each concept (reliability), Table 5 demonstrates that all concepts exceed the minimum level of 0.7 recommended by Hair et al. (1998) and Garcia and 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%).

In terms of convergent validity, Table 5 shows how all concepts always explain over 50% of the variance, the minimum value put forward by Hair et al. (1998) and Garcia and 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.

In summary, we may state that the measurement model fits the data perfectly with the indicators selected being robust and reliable for the purpose of measuring the respective latent variables (the concepts).

Taking into consideration the results registered, it was found that among the four indicators proposed for measuring the concept of value (Table 2), only two (V2 and V3) demonstrated a good explanatory capacity attributing the value construct 91% internal reliability. This is a far higher value than that turned in by other studies (Ex: Webb and Jagun, 1997; Martensen et al., 1999) when measured in a unidimensional approach but also in many dimensions when studied multidimensionally (Ex: LeBlanc and Nguyen, 1999; Hermawan, 2001).

Similar to various studies of other sectors (Zeithaml, 1988; McDougall and Levesque, 2000; Cronin et al., 2000; Hermawan, 2001; Fornell et al., 1996; Eggert and Ulaga, 2002) and on higher education (LeBlanc and Nguyen, 1999; Hermawan, 2001; Ledden et al., 2007), this study also found that the indicator that reflects a global perception of the trade-off between price and quality proved preponderant for measuring the concept of perceived value when approached as a higher order construct and by unidimensional means. The other indicator, which this research project also identified as registering fairly significant individual reliability when measuring the value construct, was that making a comparison with other alternatives as was put forward by Eggert and Ulaga (2002) and Sánchez-Fernández and Iniesta-Bonillo (2006). To the best of our knowledge, this finding has never before been proposed by any analytical study on the perceived value of higher education.
As regards the indicators that convey future targets and emotions, it was found that, contrary to other studies (Sheth et al., 1991; Woodruff, 1997; LeBlanc and Nguyen, 1999; Payne and Holt, 2001; Sweeney and Soutar, 2001; Moliner et al., 2007; Brooks and Everett, 2009; Ledden et al., 2007; Brown and Mazzarol, 2009), these indicators record individual reliability lower than the other two indicators.

In accordance with the two stage modelling strategy and having confirmed the acceptability of the measurement model, we then proceeded to calculate the structural model. This estimation model is set out in Figure 3.

![Insert figure 3 here](image)

The final model presents the relationship between the value construct and its antecedents and its consequents. Similar to the measurement model, the structural model also displays good levels of fit (GFI=0.978; AGFI= 0.957; TLI=0.981; NFI=0.987; RMSEA=0.062) 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.

However, the final model does present certain differences relative to the model initially proposed. The estimate model confirmed the relationship between image and perceived value similar to the results attained by Martensen et al. (1999) and Brown and Mazzarol (2009). Furthermore, the relationship between value and satisfaction was confirmed in accordance with the results of the aforementioned research projects (Churchill and Surpremant, 1982; Fornell et al., 1996; Caruana and Money, 1997; Webb and Jagun, 1997; Cronin et al., 2000; McDougall and Levesque, 2000; Hermawan, 2001; Ismail and Abdullah, 2001; Eggert and Ullaga, 2002; Brown and Mazzarol, 2009; Hu et al., 2009). In turn, the relationship between value and loyalty was not proven. For higher education, this relationship was confirmed by Brown and Mazzarol (2009) even if only weakly significant.

The relationship between the value construct with perceived quality can here neither be confirmed nor denied given that the quality construct presented a redundancy of information regarding the image construct.

Thus, we may say that image bears a fairly high level of influence in perceived value given its impact is of 0.759. Hence, if perceived image rise by one unit, perceived value rises by 0.759. Furthermore, a unit boost to student perceived value also boosts their satisfaction level although only by 0.292. The influence of perceived value on student loyalty is only indirect, through satisfaction, with an impact of 0.22 (0.292*0.759).

Through analysis of the determination coefficient ($R^2$) for the structural equation of the value construct, presented in Table 6, it was shown that the value concept, beyond that of the image construct, requires other antecedents to achieve a better explanation as image manages to explain only 57.6% of the variance in this construct.

![Insert table 6 here](image)
6. Conclusions and discussion

This research project sought to enable a better understanding of the value concept, its components and measurement, as well as the way these interrelate with their antecedents and consequents.

The project adopted a unidimensional approach as this was deemed to best enable the study of perceived value as a global higher order concept. However, studies made on perceived value, thus far undertaken on higher education, had found that the unidimensional approach resulted in very low levels of internal reliability.

Correspondingly, despite the literature on the field considering the trade-off component as that presenting greatest empirical support, the characteristics specific to education, in particular the high level of individual involvement, suggested the need to incorporate other components into measuring the construct. Educational services carry long term implications for the life of a student and hence both future goals and emotion seemed to be appropriate for the measurement of the perceived value of higher education. Furthermore, given that on having received this educational service, the student would head out to compete in the employment market with students from other universities, the decision was taken to also include a comparison with alternatives component.

However, the research results show that among the various proposed components, only that of the perception of the trade-off between quality and price and that of comparison with alternatives presented high levels of reliability. While on the one hand these results may be seen as surprising, as it might be expected that future goals might prove a preponderant component in measuring the construct, perhaps these may be explained by the actual ongoing changes in the surrounding environment. While it is true that on entering a particular university, the student expects to receive the input necessary to attain a good job in the future, the changes the labour market has been experiencing provide some indication to the student that even good education may not be synonymous with an excellent future career. This was to an extent confirmed by Brooks and Everett (2009) with their study finding that students did not feel deceived by the education received despite not believing it would be easy to obtain a job and a future career.

Furthermore, that emotion did not prove to be a relevant component to the value construct may be related to the type of service under analysis. Thus, the choice of the university and degree, with all the future implications on a student’s life, may be much more of a rational than an emotional question. This conclusion was also reached by Alves and Raposo (2009) as regards the components of higher education satisfaction.

In turn, the fact that the comparison with alternatives proved to be significant to the measurement of the value construct might derive from the initial assumption of the authors when suggesting that the post-consumption of this service will place the student in a situation of direct competition with students of other universities and hence for this reason the students compared that which they receive with the alternatives available.

It would seem important that a higher education institution dedicates 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. Nevertheless, this needs to be carried out while taking into consideration the service provision of direct and substitute competitors.

There is a further need for universities to set about improving their institutional image and their service range as this was found to generate a very significant rating in terms of improving both perceived value (0.759) and student satisfaction (0.68).

7. 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.

The fact students attend different levels of study may also condition the way that students perceive the value of the educational service received and hence it would be interesting to replicate this study with post-graduate studies.

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.
References


Table 1 - Studies on higher education focusing on the value concept

<table>
<thead>
<tr>
<th>Study</th>
<th>Approach</th>
<th>Construct or dimension internal consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Webb and Jagm (1997)</td>
<td>Uni-dimensional, measured through:</td>
<td>0.61</td>
</tr>
<tr>
<td></td>
<td>- The benefits I receive from XYZ are in line with the sacrifices I have to make (e.g. money, time, labour)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- My association with XYZ has been of value to me</td>
<td></td>
</tr>
<tr>
<td>Martens et al. (1999)</td>
<td>Uni-dimensional, measured through:</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>- Value of education in relation to one's own effort</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Value of the education in relation to future job and career</td>
<td></td>
</tr>
<tr>
<td>LeBlanc and Nguyen (1999)</td>
<td>Multi-dimensional, measured through the following dimensions:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Functional value (price/quality)</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>- Epistemic value</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>- Functional value (future goals)</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>- Emotional value</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>- Social value</td>
<td>0.69</td>
</tr>
<tr>
<td>Hermawan (2001)</td>
<td>Multi-dimensional (but where each dimension was evaluated by other first order dimensions)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Functional value</td>
<td>0.56-0.87</td>
</tr>
<tr>
<td></td>
<td>- Social value</td>
<td>0.62-0.81</td>
</tr>
<tr>
<td></td>
<td>- Conditional value</td>
<td>0.40-0.76</td>
</tr>
<tr>
<td></td>
<td>- Emotional value</td>
<td>0.80-0.91</td>
</tr>
<tr>
<td></td>
<td>- Epistemic value</td>
<td>0.40-0.75</td>
</tr>
<tr>
<td>Leiden et al. (2007)</td>
<td>Multi-dimensional, measured through the following dimensions:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Give dimension</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>- Functional value</td>
<td>0.89</td>
</tr>
<tr>
<td></td>
<td>- Epistemic value</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>- Conditional value</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>- Emotional value</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>- Social value</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Non-monetary sacrifice</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>- Monetary sacrifice</td>
<td>0.89</td>
</tr>
<tr>
<td>Brown and Mazzarel (2009)</td>
<td>Multi-dimensional, measured through the following dimensions:</td>
<td>Not Mentioned</td>
</tr>
<tr>
<td></td>
<td>- Emotional value</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Social value</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Price/value</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Quality/performance</td>
<td></td>
</tr>
</tbody>
</table>

Source: own elaboration
Table 2- Variables proposed to measure perceived value

<table>
<thead>
<tr>
<th>Variables</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1. The experience I have gained in this university will help me to get a good job.</td>
<td>Future goals</td>
</tr>
<tr>
<td>V2. Taking into consideration the price I pay (fees, charges, etc.), I believe my university provides quality of service.</td>
<td>Trade-off price/quality</td>
</tr>
<tr>
<td>V3. Compared with other universities, I consider that I receive quality of service for the price that I pay.</td>
<td>Comparison with alternatives</td>
</tr>
<tr>
<td>V4. I feel happy about my choice of university/degree</td>
<td>Emotion</td>
</tr>
</tbody>
</table>
Figure 1 - Model to be tested
Figure 2- Measurement model

Legend:
Indicators:
IM1 – Good University to study in
IM2 – Global level of satisfaction
IM3 – Correspondence to needs/wishes
V2 – Price/quality
V1 – Would choose again

Errors: eim1, eim4 ... et1, et2.

IM4 – Provides good preparation to the students
S2 – Correspondence to expectations
V3 – Price/quality compared to other universities
L2 – Would choose again for a post-graduation
According to Hair et al. (1998) and Bagozzi and Yi (1988), whenever the sample used is higher than 200, the $\chi^2$ test is not indicative of good or bad adjustment of the model to the data, since the value of X-squared increases with any increase in sample size.

According to Hair et al. (1998) and Bagozzi and Yi (1988), the value of RM$\varepsilon$ can only be evaluated through the comparison of existing residuals in the initial data matrix and those existing in the matrix estimated by the model. In this model, the number of residuals with a value higher than 2.58 is of 2.2% and can thus be considered reasonably acceptable (Hair et al., 1998; Bagozzi and Yi, 1988).

### Table 3 – Absolute fit measures for the measurement model

<table>
<thead>
<tr>
<th>Absolute Fit Measures</th>
<th>Value</th>
<th>Levels of Acceptance</th>
<th>Acceptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test of X Squared ($\chi^2$)</td>
<td>208.321</td>
<td>Not applicable (*)</td>
<td>Not applicable (*)</td>
</tr>
<tr>
<td>Degrees of freedom (DF)</td>
<td>21</td>
<td>&gt; than the desired level of significance</td>
<td></td>
</tr>
<tr>
<td>Level of significance ($p$)</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goodness-of-fit index (GFI)</td>
<td>0.982</td>
<td>0 - (Awful)</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 - (Very good)</td>
<td></td>
</tr>
<tr>
<td>Root mean square residual (RMR)</td>
<td>0.065</td>
<td>Variable (**)</td>
<td>Good</td>
</tr>
<tr>
<td>Root mean square error of approximation (RMS$\varepsilon$A)</td>
<td>0.058</td>
<td>&lt; 0.05-0.08</td>
<td>Satisfactory</td>
</tr>
</tbody>
</table>

(*) – According to Hair et al. (1998) and Bagozzi and Yi (1988), whenever the sample used is higher than 200, the $\chi^2$ test is not indicative of good or bad adjustment of the model to the data, since the value of X-squared increases with any increase in sample size.

(**) – According to Hair et al. (1998) and Bagozzi and Yi (1988), the value of RMR can only be evaluated through the comparison of existing residuals in the initial data matrix and those existing in the matrix estimated by the model. In this model, the number of residuals with a value higher than 2.58 is of 2.2% and can thus be considered reasonably acceptable (Hair et al., 1998; Bagozzi and Yi, 1988).
Table 4 – Incremental fit measures for the measurement model

<table>
<thead>
<tr>
<th>Incremental Fit Measures</th>
<th>Value</th>
<th>Levels of Acceptance</th>
<th>Acceptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tucker-Lewis index (TLI or NNFI)</td>
<td>0.984</td>
<td>≥ 0.90</td>
<td>Good</td>
</tr>
<tr>
<td>Normed fit index (NFI)</td>
<td>0.990</td>
<td>≥ 0.90</td>
<td>Good</td>
</tr>
<tr>
<td>Adjusted GFI (AGFI)</td>
<td>0.962</td>
<td>≥ 0.90</td>
<td>Good</td>
</tr>
</tbody>
</table>
Table 5 - Standardized regression weights, reliability and extracted variance of constructs

<table>
<thead>
<tr>
<th>Regression weights</th>
<th>Estimate</th>
<th>P*</th>
<th>Construct</th>
<th>Indicator</th>
<th>Reliability</th>
<th>Explained Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM1 ← Image</td>
<td>0.860</td>
<td>0.000</td>
<td>Image</td>
<td>IM1</td>
<td>0.838</td>
<td>0.721</td>
</tr>
<tr>
<td>IM4 ← Image</td>
<td>0.838</td>
<td>0.000</td>
<td>Image</td>
<td>IM4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2 ← Value</td>
<td>0.887</td>
<td>0.000</td>
<td>Value</td>
<td>V2</td>
<td>0.910</td>
<td>0.835</td>
</tr>
<tr>
<td>V3 ← Value</td>
<td>0.940</td>
<td>0.000</td>
<td>Value</td>
<td>V3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1 ← satisfaction</td>
<td>0.915</td>
<td>0.000</td>
<td>Satisfaction</td>
<td>S1</td>
<td>0.929</td>
<td>0.813</td>
</tr>
<tr>
<td>S2 ← satisfaction</td>
<td>0.899</td>
<td>0.000</td>
<td>Satisfaction</td>
<td>S2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S3 ← satisfaction</td>
<td>0.891</td>
<td>0.000</td>
<td>Satisfaction</td>
<td>S3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 ← loyalty</td>
<td>0.872</td>
<td>0.000</td>
<td>Loyalty</td>
<td>L1</td>
<td>0.828</td>
<td>0.707</td>
</tr>
<tr>
<td>L2 ← loyalty</td>
<td>0.808</td>
<td>0.000</td>
<td>Loyalty</td>
<td>L2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For a probability level of 0.05
Figure 3 – Final model
Table 6 – Structural Equations of the model

<table>
<thead>
<tr>
<th>Structural Equations</th>
<th>Constructs</th>
<th></th>
<th></th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exogenous</td>
<td>Endogenous</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Image</td>
<td>Value</td>
<td>Satisfaction</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>= 0.759</td>
<td>0.576</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>= 0.68</td>
<td>0.292</td>
<td>0.809</td>
<td></td>
</tr>
<tr>
<td>Loyalty</td>
<td>=</td>
<td>0.794</td>
<td>0.631</td>
<td></td>
</tr>
</tbody>
</table>