Validación de Constructo de la Escala: Proceso de Selección de los Estudiantes
Caso: Universidad de Los Andes, Venezuela

Construct Validity of the Scale: Students´ Choice Process.
Case at the University of Los Andes, Venezuela

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Resumen

Entender el proceso de selección en una Universidad es un elemento importante con alto potencial para el desarrollo de las universidades, debido a que éste identifica las fortalezas y debilidades que guían las decisiones relacionadas a las metas y políticas de la universidad. En este sentido, el propósito de esta investigación fue reunir evidencia de validación de constructo para un instrumento diseñado para medir el proceso de selección universitario de los estudiantes en la Universidad de Los Andes, Venezuela. El estudio propuesto está enmarcado en un tipo de investigación descriptiva y correlacional, con un diseño de campo no-experimental. Para ello fue tomada una población representada por los estudiantes de esta universidad, en sus núcleos de Mérida, Táchira y Trujillo; en la selección de la muestra, fue usada la técnica de muestreo probabilístico estratificado proporcional. Como técnica de recolección de los datos se utilizó la encuesta, y como instrumento el cuestionario auto-administrado, el cual fue evaluado para reunir evidencia de validez de contenido y constructo. La técnica de análisis de los datos fue el análisis de factores confirmatorio, el cual fue conducido por el CALIS del sistema SAS. El método de máxima probabilidad fue usado para estimar los parámetros del modelo y para evaluar el ajuste de los mismos, fueron evaluadas la chi-cuadrado, los índices de la bondad del ajuste GFI, AGFI, etc., y la matriz de los residuales normalizados. Los resultados de los análisis revelaron un modelo factor de orden cinco, el cual mostro un ajuste aceptable.

Palabras claves: Validación de constructo, selección universitaria, modelo de factor, bondad del ajuste.

Abstract

Understanding the choice process of a university is an important concern with high potential for developing universities, because it identifies strengths and weakness that guide the decisions related to the university goals and policies; in this way, the purpose of this research was to gather construct validation evidence for an instrument designed to measure students' university choice process at the University of Los Andes, Venezuela.. The proposed study is framed in a descriptive and correlational type of investigation, with a camp design non-experimental. It has been taken as a population, the students of this university, in its campuses of Mérida, Táchira and Trujillo; in the sample selection, the technique used was that of proportional stratified probabilistic sampling. As a data recollection technique, the survey was employed and as an instrument, the auto-administrated questionnaire, that was evaluated in order to gather valid evidence of content and construct. The data analysis technique was the confirmatory factorial analysis, which was conducted with SAS System's CALIS. The method of maximum likelihood was used to estimate the parameters of the model and to evaluate the fit of these, chi square was evaluated, the goodness of fit indexes GFI, AGFI, etc., and the matrix of the normalized residuals. The results of these analyses revealed a five-order-factor model, which showed an acceptable fit.

Key words: Construct validation, university choice, factor model, goodness of fit.

1 Introducción

Student decisions on university choice are important concerns for higher education institutions; when students finish high school, they are faced with the decision to enter a university; if they decide to attend a university, the next decision is about which university to choose. Accordingly, the choice process of a university is a significant and multi-faceted decision for a student, since it involves a determination that has emotional impact on the student life.

University choice could be perceived as a process that has been situated in the social, cultural, and organizational context, as well as the marketing perspective. Murphy (1981) has characterized university choice as a process that can be viewed from the consumer buying roles to guide the strategic decisions in university/ college choice. Kotler & Fox (1995) established that the university choice is a process where the students get information that evaluate in detail in order to take the final decision to enroll in a university. Later, McDonough (1997) documented that university choice is a process based on organizational theories of decision making to highlight the importance of diversity of organizational contexts and status culture background on student decision-making; he established that this process also can be characterized into three basic approaches: Social Psychological, Economic, and Sociological.

Other researchers have introduced several models to the increased understanding of university/ college choice process (Chapman 1979, 1981; Dembowski 1980, Jackson, 1982, Litten 1982, Cook and Zallocco 1983, Trushein et. al., 1990, DesJardins et. al., 1999, Drewes & Michael 2006, Rapaso & Alves 2007). They describe university choice as a developmental process divided into three phases, although these models vary, they share a common nucleus of stages from an initial step of establishing a predisposition toward higher education to the final step of selecting an institution to attend.

Correspondingly, the development and validation of a scale to know the causes or factors for which a student selects a university are as well important concerns for the university administrators; and therefore substantial attention must be given to studies that address factors influencing students' decisions to select a university, since these results could be used for multiple policy development, which allow to orient theirs decisions about the institutional mission and policy that permit differentiate the institution across the higher education system.

However, given that in this study the instrument is designed to measure the students' decisions to enroll at a university, the validity estimation is focused basically toward content and construct validity. Content validity evidence is usually gathered and examined carefully and critically by expert judges to determine if the content and objectives measured by the test is representative of those that constitute the content domain. Construct validity study involves several steps: formulating hypotheses based on the theoretical underpinnings of the construct; designing the study to allow for a test of the hypothesis; gathering and analyzing the data; and determine if the results most likely support the formulated hypothesis or not (Crocker & Algina 1986).

Some of the most common approaches used to establishing the construct validity of score interpretations are: the logical method, the correlational method, and the experimental method. Consequently, in this study the correlational method was used, and the main aspect of the correlational approach to gathering construct related evidence is the factor analysis, which is a statistical procedure for studying the intercorrelation among a set of test scores with the purpose of determine the number of factors or constructs required to account for the intercorrelation, and the percentage of variance accounted for by the factors. In this way, the instrument could be subjected to an exploratory and confirmatory factor analysis in order to improve its validity.

In view of that, the student decisions on university choice are important concerns for the Venezuelan universities and particularly for the University of Los Andes where until recently no study related to student decisions to enroll at a university had been carried out; therefore, the development of instruments to measure students' decisions of university choice has often been methodologically weak, given that these institutions do not carry out a true and concrete policy of institutional evaluation. Based on this, the purpose of this research was to gather construct validation evidence for an instrument designed to measure students' university choice process at the University of Los Andes, Venezuela. So, the research questions examined data collection and analysis on students' decisions in university choice process, were: ¿Are the student's decisions of university choice process reliable within their respective factors at the University of Los Andes? and ¿How well does the hypothesized measurement model involving five-first order factors fit the observed data based on student's decision to enroll at the University of Los Andes?

2 Review of Literature

2.1 Students´ University Choice: Researchers of higher education have overtly expressed their opinions, and presented theories and models in numerous professional literatures on the issue of student university choice process. For example, Kotler & Fox (1995) documented that the university choice process consists of five steps: 1) needs and motives to attend a university, which could vary in nature (external-internal stimuli); 2) information about how satisfy their needs according to their level of involvement in the decision (information from diverse personal or institutional sources); 3) evaluation of alternatives by establishing the criteria of selection, which vary according to individual or

environment influences; 4) the decision and implementation about which university to attend, considering additional information that they evaluate in detail; and 5) student satisfaction, where they usually evaluate the services to see whether it lives up to their expectations or not. This last step is the most important for a university, whose mission is to produce satisfied student, in order to improve their reputation.

Some researchers in their studies, specifically in United State, also have focused on identifying criteria using by student in selecting a higher education institution to attend (Murphy 1981, Blinn College 1994, Cleave-Hogg et. al., 1994, Wajeeh and Micceri, 1997); they revealed that the factors that relate to this concern were academic reputation, which was perceived to be the first most important factor, followed by professor effectiveness, program quality, price related issues, and personal considerations as location of campus, closeness to home, size of campus, and parental opinions. The factors that had less influence for students were media recruitment campaigns, high school recruitment visits, and university athletic programs. However, the relative importance of these factors on students' university choice process depends on individual attitudes; therefore, it indicates that this decision process differs among persons (students) due to their different attitudes.

Other researchers have introduced several models to the increased understanding of university choice process. Although these models vary, they share a common nucleus of stage; in general these stages begin with the desire to attend a higher education institution, followed by the decision to attend. The second stage includes the investigation of potential institutions of higher education. The final phase includes the application for admission followed by the actual admission and finally by the enrollment.

The model developed by Chapman (1979) expresses that the probability that a student chooses a university/college is assumed to depend upon a matrix of attributes or characteristics of the university/college; a matrix of attributes that relate the student; and a vector of demographic and socioeconomic characteristics associated with the student. The finding revealed several factors, which were interpreted as: quality/affluence, size/graduate orientation, masculine/ technical orientation, ruralness, fine arts orientations, and liberalness.

Later, Jackson (1982) and Litten (1982) developed similar models that describe university choice as a developmental process. Similarity, Hossler and Gallagher (1987) based on the work of both Jackson (1982) and Litten (1982), also proposed a three-stage developmental model (predisposition, search, and choice), which shows at each phase influential factors such as individual and organizational factors interact to produce outcomes.

Other studies have also focused on those models that could help assess the effects of university choice on student's enrollment decision, for example the linear compensatory model developed by Cook and Zallocco (1983; 200)

"holds that an individual's overall attitude toward a university is a composite of his/her attitudes toward the many attributes that a university possesses", and has two major components: importance values and beliefs. In the same way, Trushein, et. al., (1990) based in the linear compensatory model developed by Cook and Zallocco in 1983 used a multi-attitude model that states that a student's overall attitude about a particular university is a product of how important a specific item is and how much the student thinks that the university offers the item.

In these models a number of variables have been found to be consistently influential: family background, university's size, location, academic program, reputation, prestige, student's peers, friends and guidance counselor, job attributes, costs, academic experience, location, closeness to home, university regulations, close faculty-student association, physical facilities, social activities, admission standards, and availability of financial aid.

Other study conducted by Rapaso & Alves (2007) to examine which factors most influence student´s university choice process, proposed a model which was analyzed though structural equations modeling using the Partial Least Squares approach. This model emphasized that personal factors showed the greatest positive influence. However, they surveyed students of different scientific areas, which differed on the importance they considered for various factors. For medical students the individual factors that strongly influence university choice were proximity to home, cost, and parents and school teacher´s recommendations. For social science and economics students, individual factors are also the most important factors; which visits to the campus could be one of the most important factor; because previous knowledge about university was significant to their decision making process.

This review has evidenced that university choice process is an important concern, where the predominant research over time has been undertaken in United State. However, there are some studies conducted in other countries during the last years that had been examined the university selection criteria.

Sautar & Turner (2002), in their attempt to investigate students ´preferences for university, used a form of conjoint analysis known as adaptive conjoint analysis (ACA) with the purpose to explore which are the factors influencing students choice of university in Australia. Their results revealed that the most influential factors in university choice were program suitability, academic reputation, job prospects and teaching quality. Moreover, they pointed out that these finding have a great significance for education managers who are intending to develop promotion policies and program in the Australian universities.

Yamamoto (2006) in her research on university evaluation-selection: A Turkish case, examined the university selection criteria of students and their point of view to university evaluation and selection in Turkey, intended for better university administration, using marketing tools. The re-

sults revealed that personal preference come to be the most influential factor in university choice. Other secondary reasons coexist along with this main one were parents influence, university entrance exam score, university ranking and friends. Physical factors and facilities have also impact in the selection process.

Drewes & Michael (2006) conducted a study to explore how de students make choices between seventeen (17) institutions in Ontario, Canada. They used a rank-ordered logit model to explore the role of distance, university quality, and other university attributes, to evaluate the preferences of applicants. The finding revealed that the students prefer universities that are closer to their homes, spend more on scholarship and teaching, and offer higher levels of non-academic student services. These results also showed clear evidence that the students are aware that their prospects of admission vary across institutions and move towards their knowledge by evading applications to universities unlikely to admit them.

Wagner & Fard (2009) identified factors that had significant effects towards Malaysian students´ need to follow higher education. They found that the most important factors for students' choice were cost of education, physical aspects and facilities, value of education, and institutional information. Additionally, family, friends, peers and students have also a significant influence on the student´s selection process.

2.2 Construct Validation:

Several researchers have presented their theories and the most common methods used to gather evidence for the construct validity of score interpretation. Traditionally, validity has been defined as "the degree to which a test measures what it claims, or purports, to be measuring" (Brown 1996, p. 231). According to American Psychological Association, American Educational Research Association, & National Council on Measurement in Education (1985, p. 8) "validity refers to the appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores". Cronbach (1971) also described validity as the process by which a test developer or test user collects evidence to support the types of inferences that are to be drawn from test scores.

The 1985 Standards for Educational and Psychological Testing, written by the Joint Committee on Educational and Psychological Test (APA, AERA, and NCME) recognize three different ways to gather evidence about the validity of test scores inference: content related evidence, criterion related evidence and construct evidence of validity. Content validity refers to the degree to which the scores yielded by a test adequately represent the conceptual domain that these scores propose to measure; criterion validity refers to the extent to which the test scores on a measuring instrument are related to an independent external criterion (relevant, reliable) believed to measure directly the behavior or char-

acteristic in question; and construct validity refers to the extent to which a particular test can be shown to assess the construct that it purports to measure.

Some studies of construct validation with reference to factor analysis have used exploratory factor analysis as well as confirmatory factor analysis as the method to examine the data. For example, Crocker and Algina (1986) illustrated the application of factor analysis to an exploratory construct validation study involving a battery of tests. The purpose of this study was to determine the number of common factors required to account for a pattern of correlations among all pairs of tests in a set of tests, the nature of the common factors that account for the test intercorrelation, and the proportion of variance associated with common factors variance.

Later, Rickman and Green (1993) evaluating an instrument identified thirty-three items that could influence the university choice process. Exploratory factor analysis was used as the procedure to examine the factor structure. The results suggest that individuals use specific criteria when making the college selection decision. The findings revealed four factors had statistically significant difference above the 0.05 alpha level, however, academic excellence, individual preference, and secondary information were found to be the most significant factors in their college decision process.

3 Method

3.1 Participants

The study population involves all undergraduate students at the University of Los Andes (ULA), Venezuela; it consists of three campuses: a main campus located in the City of Mérida, and two branch campuses, which are located in the cities of Táchira and Trujillo. For purposes of this research, a proportional stratified probability sample was used to select the participants, in order to ensure that all colleges and university branch campuses at the ULA were included in the study.

Accordingly, taking into account that many researchers have suggested a wide variety of guidelines for estimating an adequate sample size in factor analysis, which typically involve determining the sample size in terms of the number of measured variables being analyzed (MacCallum and Tucker, 1991 and MacCallum et. al., 1999); thus, the minimal number of subjects in the sample should be 25 times the number of variables being analyzed, which for this study it indicates a minimally adequate sample size of 700 participants. However, considering that larger sample sizes are required in confirmatory factor analysis, and that a certain number of students can be expected to leave at least one question blank, which will not provide usable data for the factor analysis, the researcher considered that an adequate sample size should be 1,000 students, with the expectative of obtaining results that could be adequately stable and con-

gruent with parameters estimates.

3.2 Instrument

The survey instrument used in this study was a self-administered paper–and-pencil questionnaire, which includes closed-ended questions. The questionnaire identified twenty-eight items, which measure the student's decisions of university choice. Students answered the questions related to their decisions to select the university of Los Andes by rating the perceived importance of each item on a five-category rating scale that was arranged in the following order: 1 = extremely low importance, 2 = low importance, 3 = moderate importance, 4 = high importance, and 5 = extremely high importance.

In order to examine the content validity evidence, the instrument was reviewed by a group expert professor from the department of measurement and research at University of South Florida; they reviewed the instrument to assist in the development and validation, in terms of clarifying the items, simplifying wording, and completeness of description. Based on the professional judgments of the reviewers, some changes were made in the demographic information and scale. Lastly, a content validation of the Spanish version of the instrument was conducted for a small group of expert professors the Universidad of Los Andes in Trujillo. They reviewed the instrument to assist in the validation of the Spanish version. Finally, to assess construct validity, the instrument was pilot tested on one of the university campuses of the University of Los Andes, which has special characteristics such as: offers a diversity of programs of study, that are connected to different colleges; it is the second campus with the highest number of student; and is located outside the central campus, in Trujillo State. 3.3 Pilot Study

In the pilot study attempts were made to select students from all the different field of studies, thus, the sample was based on a non-probability sampling; specifically a convenience sample of 223 students. Responses to the survey instrument in the pilot test were subjected to exploratory factor analysis with oblique rotation, in order to determine the pattern of intercorrelation among the items.

Cronbach alpha coefficient was used in the pilot study to determine the internal consistency reliability of the scale, which was determined on scale items by domain and factors across the domain. The results show: that the domain revealed a value of .87 and by factors: Factor 1: facility/ support .81, Factor 2: influential .89: Factor 3: academic resources .72; Factor 4: prestige .61; and Factor 5: quality/reputation .72. These findings revealed relatively little error, and strong internal reliability coefficients, which all exceed the minimum value of .70 suggested by Nunnally (1978), except the coefficient associated with factor 4, which is considered relatively low, however, it should be improved by dropping from the scale those items that demonstrated poor item-total correlation or revealed mean-ingful loading on more than one factor.

The pilot study results involving exploratory factor analysis as the method of data analysis permitted to determine the final factor structure, which provide supportive evidence of using confirmatory factor analysis as evidence of construct validation.

3.3 Data Analysis

The statistical treatment of the data was the following: a) Data collected were analyzed using one of the more commonly used statistical software packages: Statistical Analysis Software (SAS) version 8.1, specifically the SAS System's CORR-ALPHA, and CALIS procedures; b) Scale reliability was assessed by calculating Cronbach alpha internal consistency, which was obtained for the domain considered and by factors resulting of the factor analysis solution; c) Confirmatory factor analyses were performed to evaluate the hypothesized models underlying the twenty-five items; also items means, variability, skewness, kurtosis, correlations among the items were performed to evaluate the confirmatory factor analysis assumptions; d) Specification, Identification and Estimation of the confirmatory factor model, which: specifies the posited relations of the observed variables to the underlying constructs, with the constructs allowed to intercorrelate freely (Φs), should be identified if he has at least three items for each factor, and if the variances of the factors are set equal to one; and finally to estimate all parameters in the first-order factor model, Maximum Likelihood Estimation (MLE) method was used; e) Assessment of Fit: Goodness-of-fit indices concern determining how well a model fits the data; however, due to there is no established criterion or definitive way to assess how well the specific model accounted for the data using some of the goodness-of-fit indices, it is necessary to examine multiple fit criteria, although controversy still exists over the most appropriate indices to evaluate the model's fit; so, the chi-square statistic (χ^2) derived from maximum likelihood has been used, which provides a test of the null hypothesis that the model fits the data; however, given the known sensitivity of χ^2 to larger samples sizes and departures from multivariate normality, this study used several practical indices of fit, such as: Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Bentler's Comparative Fit Index (BCFI), Bentler and Bonett's Normed Fit Index (BBNFI), Bentler and Bonett's Non-normed Fit Index (BBNNFI), Bollen Normed Fit Index (BNFI), and Bollen Non-normed Fit Index (BNNFI); which have been proposed to evaluate the overall model's fit for the analysis of covariance structures. In the evaluation of each model's fit the following criteria were considered to indicate *a reasonably good fit*: a) the *p* value associated with the chi-square test should exceed .05 (the closer to 1.00, the better), b) for the alternative fit indices values of .90 or greater (Bentler & Bonett, 1980); the root mean square residual should be zero or close to zero (however, a

liberal criterion of large residuals is a value of .10); standardized residuals whose absolute values do not exceed 2.0; and the *t* statistic values greater than 1.96 in absolute values are statistically significant (Hatcher, 1998).

4 Results

The reliability estimate for the domain Students' decisions to select the ULA was of .75, which revealed adequate reliability according to the minimum value suggested by Nunnally (1978) of .70. The reliability estimates by factor across the domain also suggest adequate reliability (Factor 1: facility/ support .83; Factor 2: influential .74; Factor 3: academic resources .45; Factor 4: Prestige .46; and Factor 5: quality/reputation .73); although some of them (factors 3 and 4) are less adequate due to some items of the factors demonstrating poor item-total correlation.

These results suggest that some items should be dropped from the instrument, in order to improve the reliability of the scale. However, once realized the changes suggested by the outputs related to internal consistency reliability on the initial scale, the reliability values for the modified scale related to the domain, revealed a relatively slight increase (.77); and the reliability of factors three (academic resources) and four (prestige) shown a much better increase (.50 and .52, respectively). These findings show that the performed changes resulted in higher reliability values; therefore, these modifications (removing items I8, I10, and I11) increased estimated scale reliability.

The use of confirmatory factor analysis assumes that a number of requirements (e.g., normally distributed data, lack of variability in items, absence of multicolineality) have been met concerning the nature of the data as well as the confirmatory factor model. Consequently, these assumptions were inspected and satisfied. The confirmatory factor analysis was performed using the SAS system's CALIS procedure, which used the maximum likelihood method of parameter estimation in the model. Individual parameter values were analyzed to test statistical significance. A great part of these results obtained demonstrated to be statistically significant at $p < .001$. The factor loadings I8, I10, and I11 showed values substantially low (.06, .08, and .10, respectively). From these results, one can conclude that greater part of the factor loadings were significant.

The error values range from 0.025 to 0.043, which showed no problematic values (such as 0.0003) for accepta-

ble errors, therefore, these results presented reasonable values for all measured variables. The covariances were estimated for every possible pair of factors since all latent variables are normally allowed to covary in a confirmatory factor analysis. The estimated covariance of the factors demonstrated reasonable values (ranges from .16 to .63), except the covariance between the factor two and five, two and three and factor two and four, which showed insignificant values (-.08, .06 and .01, respectively), and the correlations between these pairs of factors were near zero (See Figure 1).

Estimation of the model revealed a significant chi-square. The chi-square value of 990.86 with 265 degree of freedom is significant with a probability of .0001, indicating that the model does not provide an adequate fit to the data. This significant value, however, was expected and it may be for the reason that the chi-square value is in part due to the large sample size used in the study, rather than to misspecification of the model, since the model was identified according to the criteria used to this purpose.

However, some of the alternative fit indices revealed a relatively good fit even when the (χ^2) test suggests rejection of the model. For example, the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the Bentler's comparative fit index (BCFI), the Bentler and Bonett's Non-normed Fit Index (BBNNFI), and Bollen non-normed index (BNNFI) of .923, .905, .863, .850, and .864 respectively, are at or close to the acceptable criterion of .90, used by many researchers as an indication of a good fit to the data, indicating that these indices have an acceptable fit of the five-first-order factor model related to students' decisions to enroll at the University of Los Andes.

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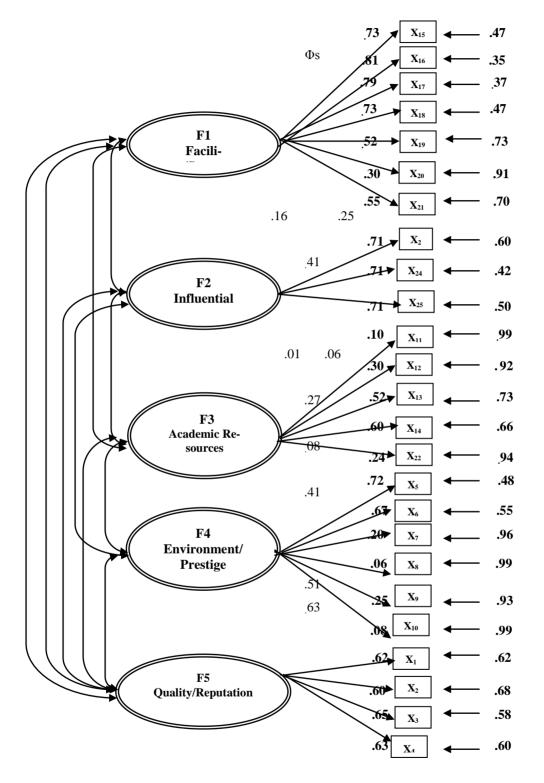
Fig. 1: Estimates Data for Five-First-Order Factor Model

Moreover, although the alternative indices of the over-all fit: Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Bentler's Comparative Fit Index (BCFI), Bentler and Bonett's Non-normed Fit Index (BBNNFI), and Bollen Non-normed Fit Index (BNNFI), demonstrated values that exceed or are near the criterion of.90, indicating an adequately fit to the data, other indicators as: the significant chi-square test, some factor loadings (I8, I10, and I11) and the remaining alternative indices: Bentler and Bonett's Normed Fit Index (BBNFI) and Bollen Normed Fit Index (BNFI) with values less than .90, indicate that the model does not provide an adequate fit to the data. Consequently, these results reveal that the fit of the model to the data could possibly be significantly improved, considering the outputs of these indicators.

Consequently, given that some overall fit indices showed values less than .90, and the model had statistically significant chi-square, and demonstrates significant problems with some of the standardized residuals and with some of the factor loading estimates, it was considered important to examine the modification of the model with the propose of formulating a posteriori model that would fit the data more adequately.

This is carried out by making some modifications in the initial model that will result in improvement in overall model fit. Realized the changes suggested by the significance of the individual parameter (drop I8, I10, and I11), the results related to the five-first-order modified model, in students' decisions of university choice, showed a chi-square for the revised model of 865.34, with 200 degrees of freedom, this chi-square value is still statistically significant (p < .0001). These results show a moderate descend of approximately thirteen percent from that observed with the initial measurement model, where chi-square was 990.86, with 265 degrees of freedom. Also, these findings reveal that the modified measurement model provides significant factor loadings (all are statistically significant at p < .001); and shows an acceptable fit to the data, indicated by the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Bentler's Comparative Fit Index (BCFI), Bentler and Bonett's Non-normed Fit Index (BBNNFI), and Bollen Non-normed Fit Index (BNNFI), whose values are .923, .902, .873, .853, and .873, respectively. Therefore, these results provide support for the modified model, since the reliability of the factors also performed more adequately.

5 Discussion and Conclusions

The findings indicate that the instrument based on the students' decisions to select the ULA has adequate internal consistency reliability with values that exceeded .75. The internal consistency reliability by factor across the domain also revealed adequately reliability except the estimates for factor 3 and 4, which demonstrated inadequate estimates. Therefore, the findings of this analysis suggest that the item 11 "closeness to home" (factor 3) and the items 8 'length of time to degree" and item 10 "university's geographic location" (factor 4) should be dropped from the instrument, in order to improve the internal consistency reliability of the scale related to university choice process. These changes should be performed, since they revealed, in the modified model, higher reliability values.

The confirmatory factor analysis findings showed a significant chi-square at p < .0001. Overall goodness of fit indices were used for determining how well the models fit the data, these indices revealed a relatively good fit even when the chi-square test suggests rejection of the model. These results reveal that the five-first-order model could possibly be significantly improved, considering the outputs of these indicators.

Consequently, this study recommends that the only change that was justified was to drop from the scale the measured variables 8 (length of time to degree), 10 (university's geographic location), and 11 (closeness to home), since it improved the model's fit.

Finally, the findings, in general, could have several implications for the University of Los Andes, since it identifies strengths and weakness that guide the decisions related to university goals and policies. One implication could be the results' interpretation for the decision makers; these findings could be used by the university's authorities in the definition of academic policies such as permanent professor formation, professor evaluation, student enrollments, and research's stimulation; in order to keep university appearance from a point of view of values and prestige associated to professors, students, alumni, researches, and publications. Another implication could be the instrument's utilization for a continuous assessment. The instrument could periodically be administrated possibly one time a year, in order to assess the university cultural evolution, given that whereas a requirement is satisfied, other become priority. Thus for example, in a university advanced culture with the basic requirements satisfied, the university athletic program should assume a priority position.

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