REPeC, Brasília, v. 12, n. 3, art. 2, p. 291-309, Jul./Sep. 2018
Available online at *www.repec.org.br*
DOI: http://dx.doi.org/10.17524/repec.v12i3.1778

Revista de Educação e Pesquisa em Contabilidade
Journal of Education and Research in Accounting

Periódico Trimestral, digital e gratuito publicado pela Academia Brasileira de Ciências Contábeis

ISSN 1981-8610

Influential factors in student retention: a study involving undergraduate students in Accountancy

Abstract

Objective: The research objective is to analyze influential factors in student retention with a view to producing indicators for the management of Accountancy courses. The factors considered derive from the model by Cabrera, Nora and Castañeda (1992), including cognitive and behavioral factors as well as factors external to the institution.

Method: The data were collected through a survey, involving a sample of 155 students from an undergraduate Accountancy program. The students' perception of the factors considered was measured on a Likert scale. The data were submitted to factorial analysis and structural equation modeling.

Results: The results evidenced that the factors "encouragement by close persons" and "academic and intellectual development" were more important in the explanation of student retention.

Contributions: The results contribute to the creation of mechanisms and indicators that affect the retention, contributing to the management of the Accountancy courses through the students' perception of the course and its context.

Key Words: Student retention; undergraduate Accountancy program; influential factors in student retention; factor analysis; structural equation modeling.

Luis Felipe Hortenzi Vilela Braga
M.Sc. in Accountancy from Pontifícia Universidade Católica de São Paulo (PUCSP) and Administrative aid at University Center Central Paulista (Unicep). **Contact:** R. Miguel Petroni, 5111 - Lot. Hab. São Carlos 1, São Carlos (SP), CEP: 13563-470.
E-mail: luisfelipe@unicep.com.br

Neusa Maria Bastos Fernandes dos Santos
Post-Doctoral degree in Controllership and Accounting from University of São Paulo (USP) Professor at Catholic Pontifical University of São Paulo (PUCSP). **Contact:** Rua Monte Alegre, 984, Perdizes, São Paulo (SP), CEP: 050014-901.
E-mail: admneusa@pucsp.br

José Carlos de Toledo
Ph.D. in Production Engineering from University of São Paulo (USP) and Professor at Federal University of São Carlos (UFSCar). **Contact:** Rodovia Washington Luiz, KM 235, Caixa Postal 676, Monjolinho, São Carlos (SP), CEP: 13565-905.
E-mail: toledo@ufscar.br

Andrei Aparecido de Albuquerque
Ph.D. in Organizational Management from University of São Paulo (USP)
Professor at Federal University of São Carlos (UFSCar). **Contact**: Rodovia Washington Luiz, KM 235, Caixa Postal 676, Monjolinho, São Carlos/SP, CEP: 13565-905
E-mail: andrei@dep.ufscar.br

Jhon Franky Bernedo Gonzales
Ph.D. in Statistics from University of São Carlos (UFSCar) and Professor at Catholic University of Santa Maria (UCSM). **Contact:** Urb San Jose, S/N, Yanahuraua, Arequipa, Peru.
E-mail: jhonbg@gmail.com

Published in Portuguese and English. Original Version in Portuguese.

Received in 1/5/2018. Ask to Revise on 4/24/2018. Resubmitted on 5/24/2018. Accepted on 5/30/2018 by Dr. Orleans Silva Martins (Editor).
Published on 8/22/2018. Organization responsible for the journal: Abracicon

1. Introduction

Although the number of students attending higher education courses in Brazil is increasing, student retention, that is, the student's stay at the Higher Education Institution (HEI) until the conclusion of the course, is a problem, as many students drop out, increasing the dropout rates in Brazilian higher education.

According to Tinto (2012), the focus on the student's decision to complete or abandon a course is a problem that needs to be understood from the perspectives of the student, HEI and external factors specific to each context and course. In this sense, the motivation for this research is to understand the factors that lead to student retention from the viewpoint of the student, in a certain context, seeking learning that contributes to the management and quality, particularly in Accountancy (AC) courses.

In Brazil, most publications on the subject address the phenomenon of evasion. Investigations are conducted with students who have dropped out or are likely to drop out. From the methodological point of view, the motivation for this research is to fill the gap of the lack of approach of the problem from the perspective of student retention, that is, the desire to continue taking the course at the institution, investigating the perception of students who are attending AC.

According to the Educational Census of the National Institute of Educational Research Anísio Teixeira (INEP, 2016), AC Bachelor's degree programs in 2015 totaled 355,425 students, ranking fifth among the number of students offered in Brazil. The training of accounting professionals is part of the global context of higher education, in which the role of education drives the expansion of the access, especially in developing countries. According to the Organization for Economic Co-operation and Development (OECD, 2013) data for the G20 reveal that, if the trends are confirmed by 2020, China and India will account for 40% of all young people with higher education, while the United States and the European Union will have around 25%.

Since the Law of Directives and Bases (LDB) in 1996, Brazil has restructured the education system, making it possible to expand the supply of higher education, which advanced by 62.84%, according to INEP (2016), in number of enrollments between 2006 and 2016. On the other hand, data from the INEP Census (2016) reveal the low coverage of Brazilian higher education, with only 18.1% of the population aged 18 to 24 inserted in the education system, results much lower than the average of 40% in Latin America and the Caribbean (LAC), according to Ferreyra, Avitabile and Botero Álvarez (2017).

Araujo and Mello (2015), in a survey of 574 teachers in AC courses in Brazilian HEIs, observed the insufficient opportunity for qualification and degree and lack of preparation for academic and pedagogical management. The authors also reported on the lack of student motivation, the heterogeneity of the classes, the great amount of administrative work for the teachers and the difficulty to evaluate the level of learning.

Starting from the context of higher AC education in Brazil and searching for quality and efficiency parameters in course management, the research reported in this article reveals the concern with student retention, recovering the first explanations of the phenomenon based on Psychology and Sociology. Among the studies with references in Sociology, the work by Tinto (1975) was pioneer in creating a theory to explain the student retention process. Next, the studies expanded their analysis horizon, incorporating social, behavioral and financial dimensions proposed by Bean (1982) and Bean and Metzger (1985). Later, Cabrera, Castañeda, Nora and Hengstler (1992) integrated the studies based on Psychology and Sociology and focused on the convergence of the proposed theories.

In Brazil, most AC courses and the highest dropout rates of this course are found in the private network. There is little information and academic publications on the phenomenon of student retention in this course in Brazil. In this context, the research carried out in an undergraduate course in AC at a private HEI in the State of São Paulo intends to answer the following question: What factors influence student retention in an AC course? Based on this question, the objective of the research is to analyze influential factors in student retention, aiming to produce indicators for course management in Accountancy. The factors considered derive from the model by Cabrera, Nora and Castañeda (1992) and cover factors external to the institution, cognitive and behavioral factors.

The contributions to the management of AC courses include obtaining information to develop management plans based on students' perceptions, regarding the course and its context. While evasion research seeks to minimize losses with a reactive view, retention analyses aim to maximize the benefits through preventive actions.

2. Bibliographic Review

The concept of student retention emerged at American HEIs, where surveys of school dropout are present since the 1930s (Berger, Ramirez & Lyon, 2012). Tinto (2006) defines retention as a network of events that contribute to students' permanence until the completion of the course. This approach considers a process that results in the accomplishment of the educational objectives, resting on a relationship of fidelity between the student and the HEI. Berger, Ramirez and Lyon (2012) report that, as of 1960, most studies sought explanations for retention and dropout from the perspective of psychology with a focus on student behavior. In the 1970s, research incorporated elements of sociology, observing that social integration between the student and HEI contributed towards student retention. A pioneer in this line of research, Tinto (1975) proposed three different forms of dropout, which were also adopted by Astin (1984) and by several Brazilian authors, such as Biazus (2004), Cislaghi (2008), Lobo (2003) and Silva Filho et al. (2007). This approach classifies dropout as i) when the student abandons the course of origin and chooses another course at the same HEI; ii) as dropout of the HEI when the student turns to another educational institution; and (iii) dropout of the system when the student gives up the completion of higher education.

The explanation of dropout as a sociological phenomenon occurred initially through the research by Spady (1970) and Tinto (1975). While Spady (1970) contributed to the conceptual and methodological classification of research in the philosophical, census, exploratory, case study, descriptive and predictive areas, Tinto (1975) evolved in predictive studies and created several terminologies to discuss the problem, including the friction between school and student, school failure, student success, retention and persistence.

Pascarela and Terenzini (1980) concluded that student retention takes into account three independent but synergistic variables that work together: informal contact between student and teacher, experiences in college inside and beyond the classroom, and results expressed in academic, social and intellectual performance. For the author, the variable that expresses the academic results is the one that leads to abandonment, although the informal teacher-student contact and the experiences in college can influence the academic results.

Astin's studies (1975, 1984) are multidisciplinary and consider psychological and social aspects. They point out that the effectiveness of educational policies or practices is associated with the increase in student involvement with the HEI. The author's research focuses on student motivation and behavior.

Bean (1982) studied the determinants of the attrition between the student and the HEI and, through a causal model, proposed a behavioral explanation analogous to the turnover of workers in North American companies. The conception of the empirical model by Bean and Metzger (1985) confirmed the possibility of explaining student dropout using predictive models applied to corporate management. This conceptual model gave rise to the so-called Abandonment Syndrome, taking into account the academic, social and personal results observed in the relations between coworkers and with the HEI. These factors would lead to the decision to drop out or stay, given the attrition or friction between the HEI and the student.

Most of the studies are based on the concept that the first year is the critical period during which the main dropout takes place in higher education, as indicated by Red (1975, 2006, 2012), Pascarela and Terenzini (1980) and Peleias, Petrucci, Garcia and Silva (2008). In the explanatory models of the student retention process, it is acknowledged that the reaction to the dropout can be complex and ineffective. This is compatible with the widespread concept in service marketing that it is more costly to re-establish a relationship than to maintain individual satisfaction. Therefore, the ideal is to act preventively, that is, in strategic actions aimed at student retention.

Cabrera, Nora et al. (1992) created a model that explains retention (the author used the term student permanence) through 10 predictive factors of student retention: 1) financial assistance, 2) financial conditions of the individual, 3) earlier school performance, 4) encouragement by close persons 5) academic and intellectual development, 6) performance in assessments, 7) social integration, 8) commitment to the institution, 9) commitment to the goal of graduating, and 10) an intention to stay at the HEI. This approach encompasses pre-college conditions, financial, social and behavioral dimensions, and integrates the studies based on psychology and sociology proposed by Bean (1982), Bean and Metzger (1985). In the model by Cabrera, Nora et al. (1992) considers that the student's perception can serve as an instrument for the diagnosis, elaboration and monitoring of HEI management plans.

The design of this model begins with the research by Cabrera, Castañeda, et al. (1992), who propose the combination of the Student Integration theory by Tinto (1975, 1987) and the Student Attrition theory by Bean (1982), Metzner and Bean (1987), Bean and Vesper (1990), who concluded that the commitment to the HEI and to the training objectives are indicators related to the permanence in the HEI, therefore predicting student retention. Subsequently, the studies by Pascarella and Chapman (1983), Pascarella, Duby and Iverson (1983), Pascarella and Terenzint (1983) were incorporated into the model by Cabrera, Nora et al. (1992), furthering research on the importance of social interaction between teacher and student in and beyond the classroom and factors related to the support by close persons, pre-college conditions and research on student funding, based on research by Nora (1987), Nora, Attinasi and Matonak (1990), Voorhees (1985) and Nora (1990).

According to Tinto (2006), in addition to the academic production focused on the subject of student retention, in the USA, products and services related to the subject, ranging from software development, book publishing, hiring of consultants and companies by teaching institutions, governments and other stakeholders. Tinto (2012) argues that the contributions of studies on student retention should go beyond the dropout reaction, highlighting the need for managers and academic leaders to incorporate retention actions in decision support as well as in the elaboration of institutionalized strategic planning, replacing the punctual actions.

In discussing the conclusion rate of AC courses, Byrn and Flood (2005) noted that the students who completed the training were motivated by a combination of intrinsic goals, such as confidence in their own abilities and preparation to complete the course; and extrinsic goals, involving their motivation and expectations regarding the course.

In an analysis of AC course management in Brazil based on the dropout rates as indicators, Dias, Theóphilo and Lopes (2010) observed the internal causes of dropout: deficiencies in infrastructure, lack of training of the teaching staff and socio-educational assistance. As external causes, socioeconomic reasons, dissatisfaction with the future profession, locomotion problems and forms of entry into Brazilian higher education were found. In a study of first-year AC students in Brazil, Peleias et al. (2008) observed financial problems, as well as work and study overload compromising the students' performance, especially among students of private HEI.

Through an internal evaluation instrument by Paswan and Young (2002), Gomes, Dagostini and Cunha (2013) used indicators of involvement among students and teachers to investigate variables of socialization, interaction, organization and academic management, aiming to measure the satisfaction of AC students. In a study carried out in Brazil, they verified the relevance of three analysis dimensions: i) student interest in learning, ii) teacher involvement and iii) general student satisfaction. Lizote et al. (2014) applied the same model to two AC courses in Brazil, validating six factors: i) indicators of student satisfaction, ii) teacher involvement, iii) student interest, iv) teacher-student interaction, v) course requirement, and vi) course organization. They concluded that these findings can contribute to the course organization, interaction between teachers and students, adaptation of the course curriculum, preparation of teaching plans for teachers and educational marketing plans.

Based on the model by Paswan and Young (2002), the influence of student satisfaction on the dropout and/or permanence decision is admitted (Cunha, Nascimento & Durso, 2016). In a study involving AC students from the Brazilian Southeast, the authors observed among students prone to drop out of the course that the factors of discontent were related to problems with the infrastructure and curricula. On the other hand, students who were prone to remain were not dissatisfied with their course choice, their adaptation to university life and their contact with their coworkers, although they were hardly satisfied with the course coordination and study routines. Collaborating with the authors and investigating federal universities in Santa Catarina, Cunha, Gomes and Beck (2016) find that the teacher-student interaction and the course organization are related to student satisfaction, one of the main factors for student maintenance and the image of the HEI.

The research reported in this article adopts the model by Cabrera, Nora et al. (1992) as the main theoretical framework, an option made based on the research objective, which was to analyze the factors and their impact on student retention, aiming to produce indicators for the management of AC courses in the Brazilian context. These authors studied factors of persistence in the academic context of North-American community colleges, equivalent contexts, as both adopt the guidelines of enhancing the access to higher education and expanding the student base in quantitative terms.

3. Method

For the sake of control in the field research, the application universe, although limiting the generalization of the results, was the four-year Bachelor's degree course in AC, with 248 students in total, maintained by a private institution in the interior of the State of São Paulo.

Due to the fact that the first year is considered a critical period of higher dropout in higher education, as indicated by Pascarela and Terenzini (1980), Peleias et al. (2008) and Tinto (1975, 2006, 2012), the sample plan focused on the total of 194 students enrolled in the second, third and fourth year, 181 of whom answered the questionnaire (Figure 1). Of the 181 responses, 26 were eliminated due to incompleteness, resulting in a final sample of 155 students, that is, 79.90% of the students enrolled from the second to the fourth year.

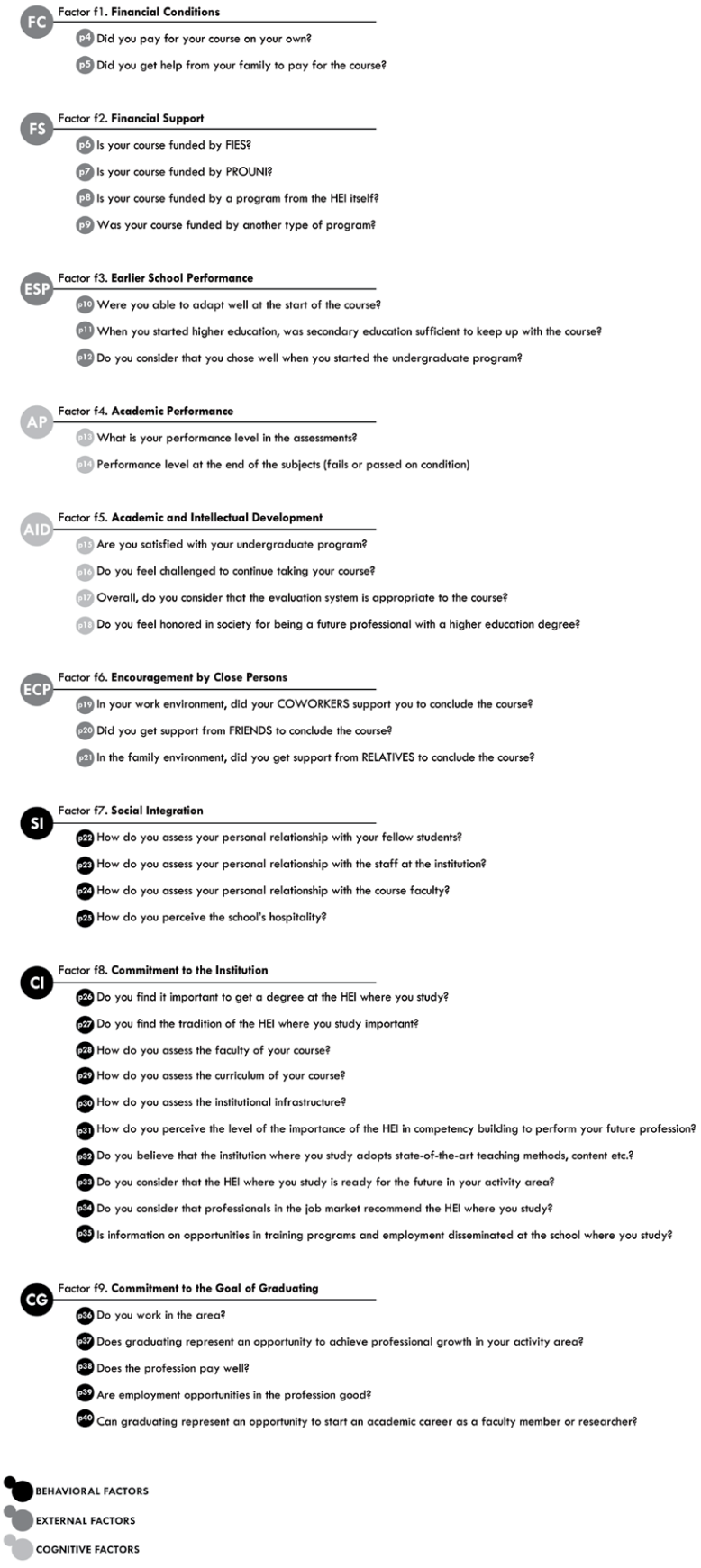

Figure 1. Questionnaire Applied

Source: created by the authors

The questionnaire, the tool used in this research, was developed based on the adaptation of the explanation model for student retention proposed by Cabrera, Nora et al. (1992). This is a semi-structured questionnaire, composed of 36 questions answered on a Likert scale, grouped into nine factors or constructs, aiming to investigate the behavior of persistent students.

Figure 1 represents the questionnaire applied and Figure 2 the hypothetical factorial structure. As an example, factor f1. is represented by the letter "f" and number "1", in the order of the questionnaire, composed of its respective indicators or questions, represented in turn by the letter "P" and also in numerical order from number "4" to "5". Factor f1 addresses questions related to the students' financial conditions. For example: "Q1: Did the student pay for the course on his own?", "Q2: Did the student receive help from the family to pay for the course?"

To put the research in practice, in the presentation and discussion of the results, the factors are represented by acronyms composed by their initial letters, for example: financial conditions (FC). Based on the factors or constructs originally applied by Cabrera, Nora et al. (1992), the questions were adapted to the Brazilian reality.

Data analysis used descriptive and multivariate statistics, with Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). The EFA and CFA analyses are intended to identify and reproduce the relationships observed between a set of indicators (questions in the questionnaire) and a set of factors (latent variables). In the data-oriented EFA, the covariance and correlations between the indicators and probable factors of the proposed model were studied in order to define variables with greater explanatory power, as well as the set of latent dimensions (factors or constructs) with their respective factor loadings.

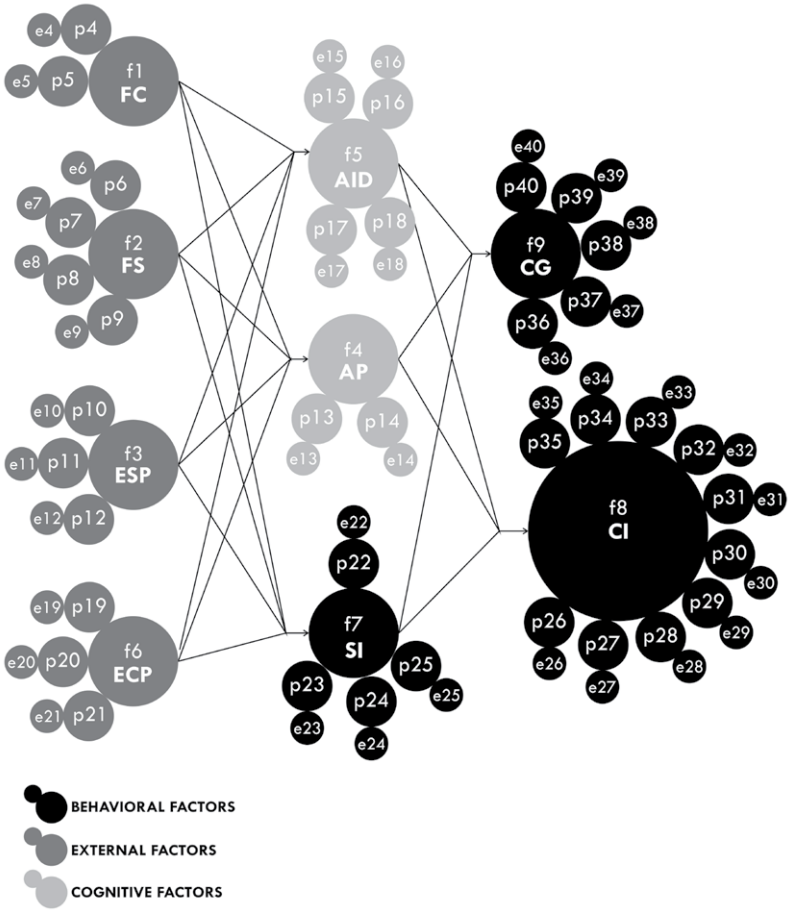

Figure 2. Hypothetic Structural Model

Source: created by the authors.

The application of EFA starts with the application of the Kaiser rule and Scree test, ending with the Parallel Analysis in which, according to Osborne (2014), the data values of the data matrix and the Scree test are analyzed together.

In the CFA, the purpose was to accept or reject a hypothetical factorial structure of a previously established model that fit the data, verifying the degree of correspondence between the obtained data and the proposed model. In the CFA, according to Brown (2015), each indicator is linked to a factor by means of the factorial model.

With the CFA, the measuring model that proposes a structural equation model (SEM) was obtained, whose relations between the factors or constructs are described in a way similar to the multiple linear regression, however, instead of having observed variables, the initial model presents latent variables. Based on the latent variables that may be exogenous or endogenous, the relation between them is obtained by the structural part of the model, given by Equation 1:

$$\eta = \boldsymbol{B}\gamma + \zeta \tag{1}$$

- η: endogenous latent variables (**dependent**)
- γ: exogenous latent variables **(independent)**
- $\boldsymbol{B}$: coefficients representing the relations between the latent variables
- ζ: random error

The *B* coefficients are called regression coefficients in the SEM. Their interpretation is presented in the same way as the coefficients of the linear regression model.

Among the several methods to estimate the parameters of the measuring model, we chose the diagonally weighted least squares method, where S is the covariance matrix of the observed indicators and Σ is the covariance matrix for indicators, as recommended by Rosseel (2012). The R Lavaan software (R Core Team, 2015) was used. Equation 2 indicates the estimation of the model parameters, that is, the loadings of each factor, the variance and covariance of the factors and the unique variance of each estimator.

$$F_{DWLS} = (S - \Sigma)^T \{diag\,(W)\}^{-1} (S - \Sigma) \tag{2}$$

The fit of the model also considers that, in the chi-square test, the indicators do not follow a normal multivariate distribution, as the research works with ordinal variables. Brown (2015), Browne, Cudeck (1993) and Hu, Bentler (1999) propose complementary adjustment indices. Therefore, in order to obtain the fit of the model, in addition to the absolute indices, we consider the parsimony and comparative indices.

4. Results and Analysis

In the data-driven exploratory factor analysis (EFA), following the application of the Kaiser rule, the Scree test and the Parallel Analysis, we identified nine factors to be confirmed by applying the proposed model. In both CFA and SEM, the main means of analysis are estimates of factor loadings and standardized indicators (*Stdall*) that measure the factor loadings of the covariance matrix and correlations for the indicators and factors. The higher the factor loadings, the stronger the relationships between the variables are and the more important they are for the explanation of the model. For the factor loadings to be accepted, they need to be accompanied by the Statistical Significance test, in which the *P (>/z/)* cannot exceed the 0.05 confidence interval in order to reject the null hypothesis.

In Table 1, the following items are presented for analysis:

- *StdIv:* Estimated loadings for standardized factors;
- *Stdall:* Estimated loadings for factors and standardized indicators;
- *StdErr:* Standard error of estimates;
- *Z Value:* Null hypothesis test; and
- *P(>/z/):* Value associated with each hypothesis.

In the analysis, the indicators were discarded, that is, questions P1, P2, P3 because they are the students' personal identification data. Based on the initial model, the p values of the indicators P11, P14, P35, P39 in Table 1 are greater than 0.05 - which indicates that the estimated factor loadings of these variables are not statistically significant, that is, there is evidence not to reject the null hypothesis.

Table 1
Estimated loadings of factor analysis indicators in the initial model

Indicator	Estimate	*Std.Err*	Z-value	P(>|z|)	*Std.lv*	*Std.all*
P4	1.000	–	–	–	0.326	0.435
P5	–1.121	0.420	–2.671	0	*0.365	0.429
P6	1.000	–	–	–	0.395	0.560
P7	0.853	0.168	5.077	0*	0.337	0.472
P8	1.264	0.211	5.994	0*	0.500	0.923
P9	1.129	0.229	4.936	0*	0.446	0.617
P10	1.000	–	–	–	0.321	0.509
P11	**0.344**	**0.272**	**1.263**	**0.206**	**0.110**	**0.142**
P12	0.820	0.209	3.931	0*	0.263	0.475
P13	1.000	–	–	–	0.288	0.484
P14	**1.241**	**0.641**	**1.936**	**0.053**	**0.357**	**0.478**
P15	1.000	–	–	–	0.453	0.559
P16	0.700	0.145	4.821	0*	0.317	0.448
P17	1.036	0.185	5.599	0*	0.469	0.603
P18	0.841	0.176	4.785	0*	0.381	0.492
P19	1.000	–	–	–	0.438	0.570
P20	0.748	0.177	4.239	0*	0.328	0.453
P21	0.559	0.185	3.018	0.003	0.245	0.409
P22	1.000	–	–	–	0.402	0.569
P23	1.109	0.198	5.604	0*	0.446	0.682
P24	1.064	0.194	5.472	0*	0.428	0.703
P25	1.756	0.346	5.080	0*	0.706	0.824
P26	1.000	–	–	–	0.081	0.162
P27	3.704	1.773	2.089	0.037	0.302	0.457
P28	6.913	3.159	2.188	0.029	0.563	0.674
P29	7.004	3.144	2.228	0.026	0.570	0.658
P30	7.687	3.683	2.087	0.037	0.626	0.643
P31	4.452	1.784	2.496	0.013	0.363	0.386
P32	5.664	2.784	2.035	0.042	0.461	0.601
P33	6.527	2.922	2.234	0.025	0.532	0.709
P34	4.997	2.280	2.192	0.028	0.407	0.583
P35	**1.975**	**1.254**	**1.575**	**0.115**	**0.161**	**0.243**
P36	1.000	–	–	–	0.272	0.503
P37	0.769	0.299	2.574	0.010	0.210	0.569
P38	1.440	0.509	2.830	0.005	0.392	0.565
P39	**0.903**	**0.494**	**1.828**	**0.068**	**0.246**	**0.397**

P(>|z|) values inferior to 0.001 are represented by 0*

Source: created by the authors

In a second application, the indicator P26 was rejected. A new analysis was done excluding the indicators P11, P14, P26, P35 and P39, as the estimates of their factor loadings were not considered significant.

Table 2 shows the goodness-of-fit ratios for the final model. The chi-square coefficient is 443.776 with 399 degrees of freedom. The p-value is greater than 0.05, indicating that the initial model rejects the null hypothesis, that is, that the observed covariance matrix is equal to the covariance matrix of the initial model, but the chi-square test is restrictive and the data present asymmetry. Therefore, other criteria have to be considered for the goodness-of-fit analysis. In the same table, it is observed that the CFI 0.866 and TLI 0.849 are inferior to 0.9, indicating that the initial model should be rejected.

In the final model, because it has a covariance structure close to the initial model, there is evidence not to reject the covariance matrix of the observed variables. The absolute indices P-value is 0.06 (greater than 0.05) and the SRMR (0.067), lower than 0.08; interpreted together as the parsimony index RMSEA (0.027), lower than 0.05; and the comparative indices CFI (0.922) and TLI (0.909) greater than 0.9. The fit of the final model is reasonable and can be accepted.

Table 2
Goodness-of-fit ratios for initial and final model

Model	χ2	p value	SRMR	RMSEA	CFI	TLI
Initial Model	631,204 (558)	0,017	0,075	0,029	0,866	0,849
Final Model	443,776 (399)	0,060	0,067	0,027	0,922	0,909

Source: created by the authors

Table 3 presents the estimated loadings, the standard estimation error, test statistic and *P-values* of the estimated loadings when the factors and indicators are standardized. As observed, all loadings of the estimators are significant (the *P-values* are inferior to 0.05).

Table 3

Estimated parameters of final model

Factor	Indicador	Estimate	*Std.Err*	Z-value	P(>|z|)	*Std.lv*	*Std.all*
f1	P4	1.000	–	–	–	0.339	0.452
	P5	–1.034	0.401	–	2.578	0.010	–0.351
f2	P6	1.000	–	–	–	0.398	0.564
	P7	0.825	0.167	4.933	0*	0.329	0.460
	P8	1.254	0.212	5.925	0*	0.499	0.923
	P9	1.137	0.233	4.88	0*	0.453	0.626
f3	P10	1.000	–	–	–	0.335	0.532
	P12	0.891	0.229	3.887	0*	0.299	0.539
f4	P13	1.000	–	–	–	0.595	1.000
f5	P15	1.000	–	–	–	0.459	0.567
	P16	0.688	0.141	4.881	0*	0.316	0.447
	P17	1.028	0.181	5.689	0*	0.472	0.608
	P18	0.803	0.167	4.797	0*	0.369	0.477
f6	P19	1.000	–	–	–	0.454	0.592
	P20	0.734	0.168	4.361	0*	0.334	0.461
	P21	0.517	0.179	2.885	0.004	0.235	0.393
f7	P22	1.000	–	–	–	0.406	0.576
	P23	1.075	0.190	5.653	0*	0.437	0.668
	P24	1.051	0.193	5.459	0*	0.427	0.702
	P25	1.755	0.345	5.088	0*	0.713	0.832
f8	P27	1.000	–	–	–	0.295	0.447
	P28	1.943	0.375	5.18	0*	0.574	0.687
	P29	1.954	0.407	4.803	0*	0.577	0.666
	P30	2.147	0.433	4.957	0*	0.634	0.651
	P31	1.215	0.319	3.808	0*	0.359	0.382
	P32	1.556	0.343	4.536	0*	0.460	0.599
	P33	1.804	0.381	4.736	0*	0.533	0.710
	P34	1.360	0.277	4.913	0*	0.402	0.576
f9	P36	1.000	–	–	–	0.285	0.525
	P37	0.723	0.309	2.340	0.019	0.206	0.559
	P38	1.234	0.482	2.563	0.010	0.351	0.506

P(>|z|) values inferior to 0.001 are represented by 0*

Source: created by the authors

Table 4 presents estimates of covariance and correlations (*Std.all* column) between the factors. The results show the significant relationships between the factors in bold. For example, there is a statistically significant relationship between f1 and factors f2 and f3.

Table 4

Estimated covariances and correlations for the final model

Covariance		Estimate	*Std. Err*	Z-value	P(>|z|)	*Std.lv*	*Std.all*
f1	**f2**	**-0.071**	**0.024**	**-2.902**	**0.004**	**-0.523**	**-0.523**
	f3	**0.065**	**0.031**	**2.083**	**0.037**	**0.568**	**0.568**
	f4	-0.019	0.033	-0.596	0.551	-0.097	-0.097
	f5	0.012	0.030	0.401	0.688	0.078	0.078
	f6	0.041	0.035	1.166	0.244	0.266	0.266
	f7	0.026	0.027	0.964	0.335	0.189	0.189
	f8	0.007	0.018	0.397	0.691	0.069	0.069
	f9	0.031	0.020	1.538	0.124	0.316	0.316
f2	**f3**	**-0.056**	**0.024**	**-2.356**	**0.018**	**-0.420**	**-0.420**
	f4	0.037	0.023	1.627	0.104	0.156	0.156
	f5	0.032	0.020	1.570	0.116	0.172	0.172
	f6	-0.006	0.022	-0.271	0.787	-0.034	-0.034
	f7	0.019	0.016	1.168	0.243	0.116	0.116
	f8	0.009	0.012	0.707	0.480	0.073	0.073
	f9	0.012	0.012	0.998	0.318	0.105	0.105
f3	f4	0.005	0.030	0.163	0.871	0.025	0.025
	f5	0.057	0.032	1.798	0.072	0.372	0.372
	f6	**0.122**	**0.041**	**2.966**	**0.003**	**0.799**	**0.799**
	f7	0.030	0.031	0.973	0.331	0.219	0.219
	f8	0.026	0.018	1.453	0.146	0.260	0.260
	f9	0.003	0.015	0.163	0.870	0.026	0.026
f4	**f5**	**0.068**	**0.031**	**2.183**	**0.029**	**0.250**	**0.250**
	f6	0.039	0.031	1.286	0.198	0.145	0.145
	f7	0.042	0.027	1.542	0.123	0.173	0.173
	f8	0.016	0.016	0.964	0.335	0.090	0.090
	f9	0.020	0.017	1.185	0.236	0.120	0.120
f5	**f6**	**0.118**	**0.038**	**3.077**	**0.002**	**0.567**	**0.567**
	f7	**0.123**	**0.040**	**3.060**	**0.002**	**0.660**	**0.660**
	f8	**0.123**	**0.040**	**3.084**	**0.002**	**0.908**	**0.908**
	f9	**0.052**	**0.021**	**2.507**	**0.012**	**0.399**	**0.399**
f6	**f7**	**0.080**	**0.039**	**2.049**	**0.040**	**0.435**	**0.435**
	f8	**0.059**	**0.023**	**2.616**	**0.009**	**0.438**	**0.438**
	f9	**0.051**	**0.023**	**2.210**	**0.027**	**0.394**	**0.394**
f7	**f8**	**0.087**	**0.030**	**2.925**	**0.003**	**0.726**	**0.726**
	f9	0.030	0.017	1.770	0.077	0.260	0.260
f8	**f9**	**0.030**	**0.014**	**2.109**	**0.035**	**0.352**	**0.352**

Source: created by the authors

The Confirmatory Factor Analysis (CFA), which guarantees the existence of the measuring model, in which each indicator is linked to its corresponding factor, permits the individual validation of the factors, as well as the observation of relations between them, as observed in Table 5. In that table, the estimated (B) coefficients, the standard error, the Z-statistic of the hypothesis test, the *P-value* and the correlations between the factors (*Std.all*) are displayed. Almost all of the relations between factors are beyond the confidence interval, that is, they have a *P-value* superior to 0.05.

Table 5

Estimated regression coefficients for the structural model

Model	Structural	(B) Estimate	*Std.Err*	Z-value	P(>|z|)	*Std.lv*	*Std.all*
f5	f1	1,196	2,149	0,557	0,578	0,874	0,874
	f2	-1,212	2,211	-0,548	0,584	-1,037	-1,037
	f3	-5,745	7,642	-0,752	0,452	-3,981	-3,981
	f6	3,978	4,373	0,910	0,363	3,776	3,776
f4	f1	0,268	0,780	0,344	0,731	0,155	0,155
	f2	-0,213	0,700	-0,304	0,761	-0,144	-0,144
	f3	-1,772	2,387	-0,742	0,458	-0,971	-0,971
	f6	1,295	1,345	0,963	0,336	0,972	0,972
f7	f1	1,039	1,590	0,654	0,513	0,874	0,874
	f2	-0,786	1,420	-0,553	0,580	-0,774	-0,774
	f3	-4,083	4,914	-0,831	0,406	-3,256	-3,256
	f6	2,752	2,819	0,976	0,329	3,005	3,005
f8	f4	-0,069	0,036	-1,909	0,056	-0,139	-0,139
	f5	0,456	0,124	3,666	0*	0,727	0,727
	f7	0,195	0,101	1,926	0,054	0,271	0,271
f9	f4	0,012	0,047	0,258	0,797	0,026	0,026
	f5	0,256	0,148	1,733	0,083	0,429	0,429
	f7	-0,008	0,134	-0,057	0,954	-0,011	-0,011

P(>|z|) values inferior to 0.001 are represented by 0*

Source: created by the authors

A new version of the model was elaborated. After discarding the relationships whose significance levels went beyond the confidence interval, Table 6 shows the estimated regression coefficients, standard error and the statistical coefficient of the Hypothesis test of the Modified Structured Model, called Final Structural Model.

Table 6

Regression coefficients for Final Structural Model

Coeficiente de regressão (B)		Estimativa	*Std.Err*	Z-value	P(>|z|)	*Std.lv*	*Std.all*
f5	f6	1.518	0.544	2.790	0.005	0.885	0.885
f4	f6	0.575	0.243	2.370	0.018	0.262	0.262
f7	f6	1.081	0.340	3.178	0.001	0.714	0.714
f8	f4	-0.066	0.034	-1.94	0.052	-0.132	-0.132
	f5	0.459	0.124	3.708	0*	0.720	0.720
	f7	0.209	0.100	2.098	0.036	0.289	0.289
f9	f5	0.267	0.115	2.326	0.020	0.432	0.432

P(>|z|) values inferior to 0.001 are represented by 0*

Source: created by the authors

The greater the range of the covariance coefficients, for the positive as well as the negative relationships, the higher the factor loadings and the weight of the relationships in the explanation of the model will be. The structural equation modeling proposed in Figure 3 expressed the presence of three analytic dimensions:

- External factors dimension: f1: Financial Conditions (FC); f2: Financial Support (FS); f3: Earlier School Performance (ESP); and f6: Encouragement by Close Persons (ECP).
- Cognitive factors dimension: f5: Academic and Intellectual Development (AID); and f4: Academic Performance (AP).
- Behavioral factors dimension: f7: Social Integration (SI); f9: Commitment to the Goal of Graduating (CG); and f8: Commitment to the Institutional (CI).

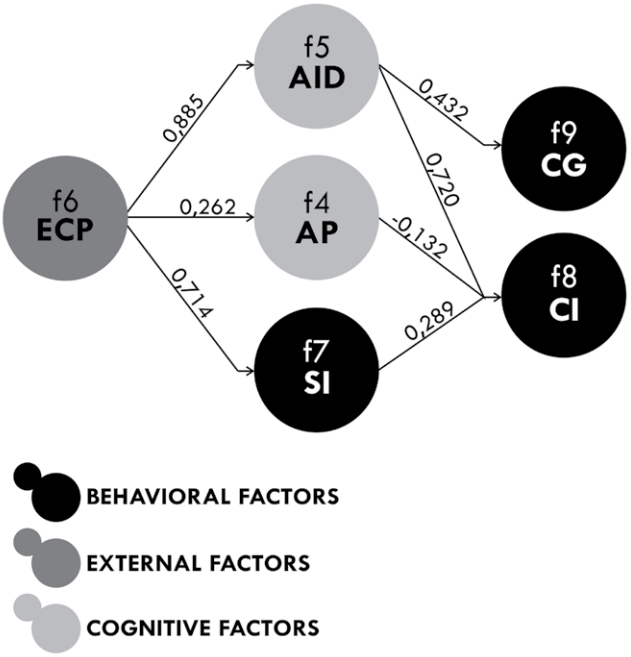

Figure 3. Final Structural Model

Source: created by the authors.

In the original model by Cabrera, Nora et al. (1992), the external variables initially addressed by Bean (1982), Voorhees (1985), Nora (1990), Cabrera, Castañeda et al. (1992) and Tinto (2006, 2012) are based on the factors Financial Support (FS) and Students' Financial Condition (FC), relating to cognitive and behavioral factors. In this research, however, the external factors, such as Financial Support (FS) and Students' Financial Conditions (FC) were excluded from the final model because they did not present statistical significance.

The pre-college conditions addressed by Nora (1987), Nora, Attinasi and Matonak (1990) and Earlier School Performance (DEA) were not withheld in the final model either in function of the statistical significance level.

The only external factor that presented acceptable levels of significance and sufficient statistical loading to present covariance relationships with other factors was Encouragement by Close People (ECP), which evidenced relationships with the cognitive and behavioral variables of the model by Cabrera, Nora et al. (1992). The external factor ECP presented relationships of 0.885 with Academic and Intellectual Development (AID) and 0.714 with the Social Integration (SI) factor.

The findings by Cabrera, Nora et al. (1992) lead to evidence that Encouragement by Close People is not the only external factor present in the students' environment that influences their persistence and retention. In the model adopted in the research reported in this article, it is assumed that the improvement of the instrument and the data collection and analysis procedures offer more expressive results referring to external factors.

Among the cognitive and behavioral factors, the most important was Academic and Intellectual Development, showing a relationship of 0.720 with Commitment to the Institution (CI) and 0.432 with the Commitment to the Goal of Graduating (CG). The Social Integration factor presented a relation of 0.289 with the Commitment to the Institution.

The presence of important relations between the Academic and Intellectual Development and the Commitment to the Institution and Commitment to the Goal of Graduating is in agreement with the results of the research by Cabrera, Nora et al. (1992), in which Academic and Intellectual Development among the main cognitive factors.

The Academic Performance (AP) factor presented a relation of -0.132 with Commitment to the Institution (CI). We observe a low and negative variation in the statistical loading, assuming that the academic performance measure improves students' gaining self-confidence and becoming less dependent and committed to the institution. Research on the factor Academic Performance can be improved by including data obtained from primary sources, referring to the results of the evaluations, conclusion of courses and semesters, collected from the HEI's academic system.

Analyzing the model from a global perspective, it is observed that external factors can exert positive influences on students' academic and social experiences, contributing to their academic performance, behavior and attitudes towards the commitment to the course and its educational objectives. These results are consistent with the proposals by Red (1975), Bean (1982) and Cabrera, Nora et al. (1992), in which the students' experiences, inside and beyond the HEI, contribute to their academic performance, personal and institutional commitments, influencing student persistence and retention.

The results of the research justify the importance of support from colleagues and family members, social interaction, expressed in the Social Integration factor, students' Academic and Intellectual Development and their Academic Performance, influencing factors indicative of persistence and retention.

The adaptation of the model by Cabrera, Nora et al. (1992), through the behavior of AC students towards their educational challenges, reflects the work by Byrn and Flood (2006), who observed the academic success of AC students based on intrinsic and extrinsic motivations.

Approaches centered on the satisfaction of AC students converge with the importance of variables of socialization and interaction between teachers and students, as well as with factors related to the management and academic organization observed in the research by Gomes, Dagostini and Cunha (2013), Lizote et al. (2014), Cunha, Gomes and Beck (2016) and Cunha, Nascimento and Durso (2016).

From the viewpoint of the management of AC courses, the adaptation of the model by Cabrera, Nora et al. (1992) was useful in presenting the possibility of investigating students' perceptions through the student retention factors, analyzed together, acknowledging their complexity. The holistic view of retention factors gives researchers and academic managers more effective assessments of students' perceptions, permitting integrated actions to promote retention.

The research results contribute to the elaboration of management plans that go beyond the mission of teaching, research and extension. The incorporation of services of welcoming, counseling and academic support is suggested, resting on the analysis and maintenance of the quality and institutional image indicators.

5. Final Considerations

The objective of analyzing the student retention factors based on the adaptation of the model by Cabrera, Nora et al. (1992) was achieved, aiming to produce indicators for the management of AC courses, as the application of factor analysis and structural equation modeling confirmed the presence of relations between factors that explain student retention, considering factors external to the institution, cognitive and behavioral factors. The student retention factors analyzed in the research can be applied as indicators to guide the management processes of the AC courses.

In the research results, the Encouragement by Close Persons shows that family support, co-workers and social interaction beyond the academic environment are important external variables for student retention in HEI, revealing, in the case studied, greater importance than Financial Conditions, Financial Support and Background School Performance.

Among the cognitive factors observed in the research, the academic and intellectual development presented a higher factor loading. Therefore, the teaching and learning process, as well as the positive results in student achievement assessments, among the most important variables expressed in this factor. These results are in agreement with factors that are also considered fundamental in the research by Pascarela (1980) and Cabrera, Nora et al. (1992).

The analysis of the AC students' behavior studied in this research contributes to the elaboration of management plans and converges with the work by Byrn and Flood (2006), who observed analysis variables synthesized in intrinsic motivations for academic success, such as trust in their own abilities and the preparation to complete the course - and extrinsic variables -, involving motivation and expectations regarding the course, and also with the studies by Lizote et al. (2016) and Cunha, Nascimento and Durso (2016), who reported on the importance of organizational, management, socialization and interaction factors influencing students' satisfaction.

The analysis of the students' profile through retention factors contributes to the elaboration of internal evaluation and institutional research tools, aiming to understand the interdependence of external, cognitive and behavioral factors, generating information and guiding planning and execution actions, involving the students' perception in the management processes of AC courses.

These actions may involve motivational aspects related to the student's education, the future professional career and also aspects related to the academic performance, involving the planning of integrated academic activities and the management of events targeting the students, such as presentation of cases of successful professionals, lectures with managers knowledgeable in the area and development and motivation workshops. These actions contribute to the course and to the profession. These activities cover the HEI's mission and the search for efficiency and effectiveness through a view and projection of an integrated image of teaching, research and extension, according to Tinto's (2012) observation on the need for managers and academic leaders to incorporate retention actions. This occurs both in decision support and in the elaboration of institutionalized strategic planning, substituting specific actions.

The presence of the encouragement by close people as the only external factor presupposes the improvement of the research questionnaire and the data collection in order to improve the study of the external factors related to the financial and preschool conditions in future research. The inclusion of data obtained in primary sources referring to the results of the evaluations, conclusion of courses and semesters, based on the HEI's academic system, complements the information obtained through the application of the questionnaire and improves the observation of the academic performance factor.

To model can be applied in longitudinal studies, analyzing and comparing the behavior of students who drop out and persist, adding demographic information obtained from the INEP database through the Brazilian national higher education census and the answers obtained by applying the socioeconomic questionnaire adopted in nationwide examinations.

References

Araujo, A. M. P. & Mello, R. R. (2014). *What is the training of the accounting professor in Brazil*. Creative Education. Recuperado em 20 de setembro, 2015 de www.scirp.org/journal/PaperInformation.aspx?PaperID=47146. doi: http://dx.doi.org/10.4236/ce.2014.511102

Astin, A. W. (1975). *Preventing students from dropping out*. San Francisco: Jossey-Bass.

Astin, A. W. (1984). *Student involvement: a developmental theory for higher education*. Journal of college student personnel, *25*(4), pp. 297-308. Recuperado em 14 de setembro, 2015, de https://www.middlesex.mass.edu/ace/downloads/astininv.pdf

Bean, J. P. (1982). *Conceptual models of student attrition: How theory can help the institutional researcher.* New Directions for Institutional Research, *36,* pp. 17-33. doi: http://dx.doi.org/10.1002/ir.37019823604

Bean, J. P. & Metzger, B. S. (1985). *A conceptual model of nontraditional undergraduate student attrition.* Review of Educational Research, *55*(4), pp. 485-540. doi: http://dx.doi.org/10.2307/1170245

Bean, J. P. y Vesper, N. (1990). Qualitative approaches to grounding theory in data: Using LISREL to develop a local model and theory of student attrition. Communication presented in the annual meeting of the American Educational Research Association, Boston, EUA.

Bentler, P. M. (1990). *Comparative fit indexes in structural models.* Psychological Bulletin, Washington, DC, *107*(2), pp. 238-246. doi: http://dx.doi.org/10.1037/0033-2909.107.2.238

Berger, J. B., Ramirez, G. B. & Lyons, S. (2012). *A historical look at retention*. In: SEIDMAN, A. College student retention: formula for student success. 2ª ed. Maryland: Rowman & Littlefield, pp. 7-34. doi: http://dx.doi.org/10.12691/education-2-6-13

Biazus, C. A. (2004). *Sistema de fatores que influenciam o aluno a evadir-se dos cursos de graduação na UFSM e na UFSC: um estudo no Curso de Ciências Contábeis.* Tese de Doutorado em Engenharia de Produção. Centro Tecnológico, Universidade Federal de Santa Catarina, Florianópolis, SC, Brasil. Recuperado em 10 de setembro, 2016 de https://repositorio.ufsc.br/handle/123456789/87138

Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. New York: Guilford.

Browne, M. W. & Cudeck, R. (1993). *Alternative ways of assessing model fit*. Sage Focus Editions, *154*, pp. 136-136. doi: http://dx.doi.org/10.1177/0049124192021002005 -

Byrn, M. & Flood, B. (2005). *A study of accounting students' motives, expectations and preparedness for higher education*. Journal of Further and Higher Education, *29*(2), pp. 111-124. doi: http://dx.doi.org/10.1080/03098770500103176

Cabrera, A. F., Nora, A. & Castañeda, M. B. (1992). M. B. *The role of finances in the persistence process: a structural model*. Research in HigherEducation, *33*(5), pp. 571-593. http://dx.doi.org/10.1007/BF00973759

Cabrera, A. F., Castañeda, M .B., Nora, A. & Hengstler, R. (1992). *The convergence between two theories of college persistence*. The Journal of Higher Education, pp. 143-164. doi: http://dx.doi.org/10.2307/1982157

Cislaghi, R. (2008). *Um modelo de sistema de gestão do conhecimento em um framework para a promoção da permanência discente no ensino de graduação.* Tese de Doutorado em Gestão do Conhecimento. Programa de Engenharia e Gestão do Conhecimento- Universidade Federal de Santa Catarina, Florianópolis, SC, Brasil. Recuperado em 21 de outubro, 2016 de http://btd.egc.ufsc.br/wp-content/uploads/2010/06/Renato-Cislaghi.pdf

Cunha V. A. da, Nacimento J. E. & Dursoo S.(2016). Razões e Influências para a Evasão Universitária: Um estudo com Estudantes Ingressantes nos cursos de Ciências Contábeis de Instituições Públicas Federais da Região Sudeste. Advances in ScientificandAppliedAccounting, *9*(2), pp. 141-161. doi: http://dx.doi.org/10.14392/asaa.2016090202

Cunha P. R. da, Gomes, G. & Beck, F. (2016). Satisfação dos Estudantes do Curso de Ciências Contábeis: Estudo em Universidades Públicas de Santa Catarina. Contabilidade Vista & Revista, *27*(1). Recuperado em 16 de maio, 2017 de http://www.redalyc.org/html/1970/197045799004/

Dias, E. C. M.; Theófilo, C. R.; Lopes, M. A. S. (2010). Evasão no ensino superior: estudo dos fatores causadores da evasão no curso de Ciências Contábeis da Universidade Estadual de Montes Claros – Unimontes – MG. In: CONGRESSO USP DE INICIAÇÃO CIENTÍFICA EM CONTABILIDADE, São Paulo, SP, 7.

Ferreyra, M. M., Aviatabile C. & Botero Álvarez J. (2017). *At a Crossroads: Higher Education in Latin America and the Caribbean*. Recuperado em 10 de outubro, 2017, de http://hdl.handle.net/10986/26489

Gomes, G., Dagostini, L. & CUNHA, P. R. da (2013). *Satisfação dos Estudantes do Curso de Ciências Contábeis: estudo em uma Faculdade do Paraná*. Revista da Faculdade de Administração e Economia, *4*(2), pp. 102-123. doi: http://dx.doi.org/10.15603/2176-9583/refae.v4n2p102-123

Hu, L. & Bentler, P. M. (1999). *Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives*. StructuralEquationModeling: A MultidisciplinaryJournal, *6*(1), pp. 1-55. doi: http://dx.doi.org/10.1080/10705519909540118

INEP. (2016). Censo da Educação Superior: Principais Resultados. Recuperado em 07 de dezembro, 2016 de http://download.inep.gov.br/educacao_superior/censo_superior/documentos/2016/censo_superior_tabelas.pdf

Lizote, S. A., Verdinelli, M. A., Borba, J. A. & Vale Brasil, M. L. A. do (2014). *Satisfação dos Acadêmicos com o Curso de Ciências Contábeis: Um Estudo em Instituições de Ensino Superior Privadas*. Advances in Scientific and Applied Accounting, *7*(3), pp. 407-431. doi: http://dx.doi.org/10.14392/ASAA.2014070305

Lobo, M. B. C. M. (2012). *Panorama da evasão no ensino superior brasileiro: aspectos gerais das causas e soluções*. Associação Brasileira de Mantenedoras de Ensino Superior. Cadernos**,** n.º 25. Recuperado em 09 de outubro, 2015, de www.abmes.org.br/abmes/video/detalhe/id/35

Metzner, B., & Bean, J. (1987). The Estimation of a Conceptual Model of Nontraditional Undergraduate Student Attrition. *Research in Higher Education, 27*(1), pp. 15-38. Recuperado em 10 de agosto de 2016 de http://www.jstor.org/stable/40195801

Nora, A. (1987). Determinants *of retention among Chicano college students: A structural model.* Research in highereducation, *26*(1), pp. 31-59. doi: http://dx.doi.org/10.1007/BF00991932

Nora, A., Attinasi, L. C. & Matonak, A. (1990). *Testing qualitative indicators of precollege factors in Tinto's attrition model: A community college student population*. The Review of Higher Education, *13*(3), p. 337. doi: http://dx.doi.org/10.1353/rhe.1990.0021

Nora, A. & Rendon, L. I. (1990). *Determinants of predisposition to transfer among community college students: A structural model*. Research in HigherEducation, *31*(3), pp. 235-255. doi: http://dx.doi.org/10.1007/bf00992310

Organisation for Economic Co-Operation and Development (OCDE) (2013). *Indicadores educacionais em foco:* dados da educação, evidências da educação, políticas da educação, análises da educação e estatísticas da educação. Recuperado em 1 de junho, 2015 de <http://www.oecd.org/edu/skills-beyond-school/INDICADORES%20EDUCACIONAIS%20EM%20FOCO%20N%C2%B011.pdf >

Osborene, J. W. (2014). *Best practices in exploratory factor analysis*. Louisville: CreateSpace Independent Publishing Platform.

Pascarella, E. T. & Chapman, D. W. (1983). *A multiinstitutional, path analytic validation of Tinto's model of college withdrawal.* American educationalresearchjournal, *20*(1), pp. 87-102. doi: http://dx.doi.org/10.2307/1162676

Pascarella, E. T., Duby, P.B. & Iverson, B. K. (1983). *A text and reconceptualization of a theoretical model of college withdrawal in a commuter institution setting*. SociologyofEducation, *56*(1), pp. 88-100. doi: http://dx.doi.org/10.2307/2112657

Pascaarella, E. T. & Terenzini, P. K. T.(1980). *Predicting freshman persistence and voluntary dropout decisions from a theoretical model*. The Journal of Higher Education, *51*(1), pp. 60-75. doi: http://dx.doi.org/10.2307/1981125

Paswan, A. K. & Young, J. A. (2002). *Student evaluation of instructor: A nomological investigation using structural equation modeling*. Journalof Marketing Education, *24*(3), pp. 193-202. doi: http://dx.doi.org/10.1177/0273475302238042

Peleias, I. R., Petrucci, V. B. C., Garcia, M. N. & SILVA, D. (2008). *Pesquisa sobre a percepção dos alunos do S DO 1º ano de Ciências Contábeis na cidade de São Paulo e as dificuldades por eles percebidas no período noturno*. Revista Universo Contábil, *4*(1) pp. 81-94. doi: http://dx.doi.org/10.4270/ruc.20084

Pereira, F. C. B. (2003). *Determinantes da evasão de alunos e os custos ocultos para as Instituições de Ensino Superior*. Tese de doutorado. Universidade do Extremo Sul Catarinense, Florianópolis, SC, Brasil. Recuperado em 16 de novembro, 2016 de https://repositorio.ufsc.br/xmlui/bitstream/handle/123456789/86403/198634.pdf

R Core Team. (2015). R: a linguagem e ambiente para computação estatística. Viena: Fundação R para Statistical Computing. Recuperado em 10 de dezembro, 2015 de https://www.r-project.org/contributors.html

Rosseel, Y. (2012). *lavaan: an R package for structural equation modeling*. JournalofStatistical Software, *48*(2), pp. 1-36. doi: http://dx.doi.org/10.18637/jss.v048.i02

Silva Filho, R. L. L., Montejumas P.R., Hipólito O., Lobo, M. B. C. M., A evasão no ensino superior brasileiro. Cadernos de Pesquisa, v. 37, n. 132, pp. 641-659.

Spady, W. G. (1970). *Dropouts from higher education: An interdisciplinary review and synthesis.* Interchange, *1*(1), pp. 64-85. doi: http://dx.doi.org/10.1007/BF02214313

Tinto, V. (1975). *Dropout from higher education: a theoretical synthesis of recent research*. ReviewofEducationalResearch, *45*(1), pp. 89-125. doi: http://dx.doi.org/10.3102/00346543045001089

Tinto, V. (2006).*Research and practice of student retention: what next.* Journal of College Student Retention: Research, Theory & Practice, *8*(1), pp. 1-19. doi: http://dx.doi.org/10.2190/4YNU-4TMB-22DJ-AN4W

Tinto, V. (2012). *Completing college: rethinking institutional action.* Chicago: University of Chicago Press.

Voorhees, R. A. (1985). *Financial aid and persistence: Do the federal campus-based aid programs make a difference?.* JournalofStudent Financial Aid 15: 21-30. Recuperado em 20 de maio, 2017 de http://publications.nasfaa.org/cgi/viewcontent.cgi?article=1419&context=jsfa