MULTIVARIATE ANALYSIS FOR THE CHOICE AND EVASION OF THE STUDENT IN A HIGHER EDUCATIONAL INSTITUTION FROM SOUTHERN OF SANTA CATARINA, IN BRAZIL

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ABSTRACT

This paper aims to develop and implement a method to identify the causes of the choice of a course and the reasons for evasion in higher education. This way, we sought to identify the factors that influence student choice to opt for Higher Education Institution parsed, as well as the factors influencing its evasion. The methodology employed was the use of multivariate statistics to identify the factors that contribute to the process investigated.

The research method was the case study of a community educational institution from Southern Santa Catarina, in Brazil.

Results show that the factors that influence the choice of the Higher Education Institution are the infrastructure for the development of education, and also for the development of research and extension activities, as well as highlight the possibility of the student attending the course chosen and pursue their professional activities.

Keywords: Multivariate analysis, university management, evasion, HE institution.

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INTRODUCTION

There is a considerable increase in the number of students enrolled in higher education, as well as the expansion in the number of courses and face-to-face and distance learning institutions, however the number of unfilled vacancies on the selection process and the maintenance of high rates of evasion contributes to the percentage of the population with tertiary education is low compared with other developing countries.

The net enrolment rate in higher education, that is, the percentage of people with 18 to 22 years attending higher education on population of 18 to 22 years has been growing slowly and in 2009 this fee amounted to 18.7%. Whereas the goal of 12 National Education Plan (2011-2020) is "Raise the gross enrolment rate in higher education to 50% and the net rate to 33% of the population of 18 to 24 years, ensuring the quality of the offer" it is becoming urgent to discuss and implement measures that reduce idleness and evasion in Higher Education Institution.

In this context, it is important to develop and implement a method to identify the factors that influence the student to choose a course to attend and those factors that contribute to the abandonment of the student. Thus emerges the survey question that guides this paper; how to reduce and group variables, forming common factors that influence student choice and abandonment of higher education?

The purpose of this study was to develop and implement a method to identify the causes of the choice of a course and the reasons for evasion in private higher education. Associated with the overall objective sought, through the case investigated at University of Southern Santa Catarina, in Brazil, we propose the following specific objectives:

> - Identify the factors of choice of Higher Education Institution;
> - Identify the factors of circumvention;
> - Propose to the Higher Education Institution investigated actions to reduce evasion.

It is Justified the choice of this subject, on the basis of importance of attraction and retention of students in Higher Education Institution. In addition, given the complexity of variables that influence the student in the decision-making process of selection and abandonment of Higher Education Institution, becomes important to understand the relationship between the different variables. For a case study, this research presents as delimitation the results regarding factors, since the reasons identified for the Higher Education Institution investigated cannot be generalized. However, the method employed, including the variables analyzed, can be applied in the different Higher Education Institution.

The paper is organized as follows, in addition to this introductory character section, section 2 discusses the choice of course and the escape in higher education, discusses the phenomenon investigated:

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selection and evasion of students enrolled in private education institutions in 2009; section 3 presents the recent Brazilian higher education scenario, analyzing data from the Brazilian higher education sector, both public and private. Section 4 deals with the methodological procedures, where I discussed the proposed method and the methodological framework of the work; in section 5 is presented the results divided into three major groups, the first one was appointed the main factors influencing on the reasons for the choice of higher education, the second deals with the factors that motivate the evasion and lastly is presented seven proposals which aim at the reduction of school dropout in Higher Education Institution searched; section 6 deals with the final thoughts of work and lastly is presented the references cited in the paper.

CHOICE OF COURSE AND EVASION IN THE HIGHER EDUCATION

Theories about the choice of a course are usually grouped into two groups: psychological theories and non-psychological theories (Ferreti, 1988; Biase; 2008). Psychological theories argue that the internal determinants of the individual have a crucial role in the process of choosing a college and not psychological theories emphasize the social, cultural and economic issues that involve the individual are the factors that determine the choice.

In this way, Biase (2008), analyzing 57 references about the reasons for their choice and find 80 categories of reasons, one can combine the motifs of choice in seven groups:

> ➢ Reasons related to student characteristics,
> ➢ Reasons related to the labour market,
> ➢ Reasons related to concern for the next,
> ➢ Reasons related to profession,
> ➢ Reasons related to family members and other people,
> ➢ Reasons for the course area and,
> ➢ Reasons for the educational process.

This work analyzed the reasons related to the characteristics of the students appear in 82.4% of cases, followed by those in the profession-related motifs that appear in 63.1% of the work and targeted at families and other people present in 54.3% of the work. Therefore, in practice these factors often act together.

Costa and Campos (2001) point out that the decision to choose a certain degree is not in an empty of meaning. The joiners even so little explicit and conscious to themselves, have few expectations of the profession that seeks, their professional success, as well as a set of beliefs about their ability to achieve the desired results. Some authors claim that one of the best strategies to help the maturity of the individual is to allow the student to experience enlightening experiences about a course, occurs in the process of vocational guidance (Silva, 2001; Silva & Soares, 2001; Andrade, 2002). That is, frustration, indecision, not identifying with the course and the escape could be minimized through a process of vocational guidance.

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It has to be the evil choices made by individuals will result in evasion, locking and repetitions in the near future or in professionals trained by repentant wrong choice (Andriola, 2003; Pereira, 2003; Andriola, Andriola & Moura, 2006). The student dropout problem is a complex phenomenon, common to the Higher Education Institution around the world. The rates of evasion of undergraduate courses in Brazil are high and do not constitute a recent problem, since historically a large number of students do not complete the course began. In recent years, has been the subject of several studies and analyses, especially in first world countries (Tinto, 1975, 1993; Bean, 1983; Bryk & Thum, 1989; Pascarella, 2005; Rumberger 1995, 2005; Christie, Munro & Fisher, 2004; Hovdhaugen, 2009). The research indicates the relative homogeneity of students' behaviour of certain areas of knowledge, in spite of the differences between the types of institutions and socioeconomic peculiarities of each country. The institutional conditions: composition curriculum, qualifications of teachers, school organization often are primarily responsible for the circumvention of students of the schools (Riehl 1999; Peixo et al. 2000; Mizikaci, 2006; Venturini, 2010). There are three fundamental elements about the role that schools play in the decisions of his students to remain in school or leaving before graduating:

> Its structures, in particular the size of the institution and type (that is, whether the school is public or private),
> Their academic organizations (especially those résumés they provide),
> Their social organizations in particular, the relations between students and teachers (Lee & Burkam, 2003; Hékis, 2004; Palazzo & Gomes, 2009).

RECENT SCENARIO OF THE BRAZILIAN HIGHER EDUCATION

Analyzing data from the Brazilian higher education sector, both public and private, it was found that in the early 1980, there were about 1,400,000 students enrolled in courses offered by 882 existing higher education institutions, and 63.3% of these students were in private institutions.

Table: 1
Establishments of higher education enrolment and attendance in Brazil (1980/2009)

Year	Establishments of education		Students enrolled on the Higher Education Institution	
	Private	Public	Private	Public
1980	682	200	885,054	492,232
1985	626	233	810,929	556,680
1990	696	222	961,455	578,625
1995	684	210	1,059,163	700,540
2000	1,004	122	1,807,219	887,026
2005	1,934	231	3,260,967	1,192,189
2009	2,069	245	3,764,728	1,501,488

Source: Elaborated based on data from Inep (2012).

At the end of this decade, in 2009, the number of students enrolled in courses has jumped to 5,266,216 students and the number of establishments is 2,377, as noted in Table: 1.

So, it is worth mentioning that in 2009 the number of students enrolled in the private sector compared to the total was 73%, and in relation to the number of higher education institutions, 89.5% were private. Allied to this growth in higher education in person, it was found that in distance education in 2002 the number of students enrolled was 40,714, while that in 2009 this number jumped to 838,125 (Inep, 2012); demonstrating the capability of this type of teaching in higher education expansion. However, the unplanned expansion of higher education institutions seek valuable information for analysis of expansion of this sector and the impacts on the formulation of public policies that guarantee the access of all people at this level of education. Although the prospect of potential growth of the Brazilian higher education is great, considering that the net tuition is 18%, in practice may already be experiencing a system over sizing, as Table 2, which manifests itself in more than one million and six hundred thousand vacancies unfilled in 2009.Specifically in relation to the private sector, in 2009, of 2,770,797 vacancies offered in the processes of selecting students, 1,613,740 were not occupied, that is 58.2%, were not fulfilled.

Table: 2
Offered vacancies, not filled and unfilled vacancies percentage

Years	Offered vacancies		Not filled vacancies		Unfilled vacancies percentage	
	Total	Private	Total	Private	Total	Private
1980	404,814	277,874	48,147	38,621	11.9%	13.9%
1985	430,482	289,208	66,486	66,572	15%	23%
1990	502,784	347,775	95,636	66,766	19%	19.2%
1995	610,355	432,210	99,978	79,845	19.3%	18.5%
2000	1,216,281	970,665	318,724	306,191	26.2%	31.5%
2005	2,435,987	2,122,619	1,038,706	1,014,019	42.6%	47.8%
2009	3,164,679	2,770,797	1,653,291	1,613,740	52.2%	58.2%

Source: Elaborated by the authors based on the data from Inep (2012).

This does not fill the vacancies offered by Higher Education Institution evidences a lack or even error in the planning of the course offerings and signal problems in the authorization of the number of slots in the upper courses held by the Ministry of education, bearing in mind that many institutions offer many Higher Education Institution vacancies on the selection process in order to reduce the candidate/vacancy ratio.

Complementing this challenge, the growing participation of students from lower purchasing power has led to default rates near 20% throughout the semester.

The legislation prohibits the imposition that delinquent students are prevented from attending classes or provide examination and the Higher Education Institution cannot deny students in arrears the documents required for the transfer at the end of the school term, which implies the possibility of his departure without discharge of debt (Goldschmidt & Wang, 1999; Schwartzman & Schwartzman, 2002; Sampaio & Laniado, 2009).

Notice that the options of choosing the student to enrol in higher education are many. Generally speaking, the candidate enlisted by groundswell offered lies in 2 as Table 3. It is necessary to point out that in some cases the student subscribes to various selection processes.

Table: 3
Jobs offered (vestibular and other selection processes)
and tickets by area – Brazil (2009)

General Areas	Offered vacancies (A)	Enrolled Candidates (B)	Candidate/ Vacancy (B/A)	Joins
Social Science, Business and Law	1,288,766	2.281.517	1.8	628.206
Education	523,401	732.730	1.4	214,675
Health and Social well-being	430,562	1.179.680	2.7	216.676
Engineering, Production and Construction	322,200	777.486	2.4	172.488
Science, Mathematics and Computing	313,798	679.209	2.2	149.654
Humanities and Arts	120,759	264.829	2.2	58.011
Services	111,614	152.772	1.4	38.010
Agriculture and Veterinary	53.579	155.207	2.9	33,668
Total	3.164.679	6,223,430	2.0	1.511.388

Source: Elaborated by the authors based on the data from Inep (2012).

Of the total number of vacancies offered in 2009, 57% concentrated on just two subareas. The predominant area was the social sciences, business and law which offered 41% of slots followed by field of education responsible for 17% of the offer of vacancy at the undergraduate level (Table: 3). It is noteworthy that in the area of Social Sciences, business and law, the administration offered only vague and 609,831 288,860 joined students and law school offered vague and 224,322 only 149,377 students joined in this course. Already in the area of education, the teacher training courses for specific subjects offered 232,687 vacancies and only 89,877 students joined (Inep, 2012).

In addition to the growing number of unfilled vacancies at graduation another variable that deserves mention is the graduation rate. Analyzing the graduation rate in Brazil from the decade's 80, who averaged 69% of students who join the College managed to complete it after five years of study (Table: 4).

Table: 4
Brazil's Degree Rates

Year	Joins	Concluding	Conc $_{t.}$/Join. $_{(t-5)}$
1980	356.667	226.423	n/d
1985	346.380	234.173	65,70%
1990	407.148	230.206	66,50%
1995	510.377	254.401	62,50%
2000	897.557	352.305	69,00%
2005	1.397.281	717.858	80,00%
2009	1.732.613	826.928	63,50%

Source: Elaborated by the authors based on the data from Inep (2012).

The evasion or retention of these students generates social and private costs to the country. The former are more difficult to measure, because signals from one side Brazilian workers to remain with a low qualification and, on the other, that the availability of places in higher education institutions do not effectively contributes to the training of researchers and skilled technicians that the country craves, since many interrupt their studies definitively.

METHODOLOGICAL PROCEDURES

Methodological Fitting
From the point of view of the approach of the problem this research is quantitative. As to the nature of the objective, this research characterized as exploratory, being the technical procedures used to bibliographical research, survey and case study.

The literature search conducted initially generated useful information for the preparation of the data collection instrument and definition of the variables analyzed. The survey allowed the questioning of persons investigated in relation to the phenomenon research and case study allowed the deep knowledge of the Higher Education Institution. The option was for the case study in order to conduct an in-depth examination of an individual case.The case examined was done in an institution of higher education, an entity with legal personality under private law, with financial autonomy, administrative and disciplinary, philanthropic, instituted in June 22, 1968, with headquarters and venue in the city of *Criciúma city, State of Santa Catarina* - Brazil. The population was composed of 1,071 students who were locked up or enrolment with their enrolments that withdrew or abandoned the institution during the last three years. To represent this population, it was estimated a 283 sample elements, composed of academics living in 17 different municipalities. The margin of error used was 5% and 95% confidence interval.

A pre-test was conducted with 36 scholars residing in *Criciúma city*, where it was possible to make small changes in the data collection instrument and set the datacollection method.

It was decided to use the personal interview, because the attempt to carry out telephone interviews proved to be infeasible due to the time required to answer the questions, approximately 20 minutes and still, by the fact of restricting the application only to students who have telephone, what sloped the search.

In this way, people were interviewed in their homes or place of work, in some cases, because of the difficulty of finding the respondent held a telephone contact in order to schedule in advance the place and date of interview. It was performed tests of *Kaiser*, *Meyere Olkin* (KMO) and Bartlett's sphericity to identify the adequacy of the data to factor analysis. By Bartlett's test, the hypothesis that the correlations between the variables can be zero was dropped (sig=0.00).

In addition, the data suggest that the data for the factor analysis feature a KMO (0.808). To check the reliability of the data collection instrument was evaluated the internal consistency of the items, using reliability analysis and calculating the *Cronbach's Alpha* for the questions obtained via the *Likert* scale. The coefficient found 0.76 confirms that the questionnaire used is suitable for the conduct of research.For the typing of data we used the Sphinx software and later, to the analysis of the data collected, we used the SPSS software. The results of the analyses are presented in the form of charts and board for better visualization.

Proposed Method

We sought to include the likely factors that influence the choice of a degree course. Was used *a Likert* scale with five alternatives in order to identify the importance of factors of influencing the choice of time academic degree (1-Unimportant; 2-little important, 3-important, 4 -Very important and 5-Extremely important). 11 variables were used as the description presented in Table: 5.

Table: 5
Description of the variable used in the identification
of the choice of the higher course

Variable	Description
CHOICE 1	Difficulty of admission in public universities
CHOICE 2	Close to home (location)
CHOICE 3	Recognized quality of courses offered
CHOICE 4	Condition of study and work at the same time
CHOICE 5	Offer the desired course
CHOICE 6	Appearance of the supporting structure (libraries, canteens)
CHOICE 7	Appearance of the facilities (classrooms, laboratories)
CHOICE 8	Possibility of studying at night
CHOICE 9	The titration of teachers
CHOICE 10	The mission of IES
CHOICE 11	The infrastructure for the development of research and extension activities

To identify the reasons that influence dropout, sought to include the personal characteristics of the institution and of the market.

A *Likert* scale with 5 points was built to measure the influence of the variables analyzed in determining student in abandoning the chosen course (1-no influence, 2-little influence, 3-moderate Influence, 4-some influence and 5-Total Influence). Table 6 below gives the description of variables used:

Table: 6
Description of the variable used to identify the causes of the evasion

Variable	Description
EVASION 1	Wrong career choice
EVASION 2	Have been admitted to a course that was not my first option in vestibular
EVASION 3	Lack of base to accompany the course
EVASION 4	Out of date résumé
EVASION 5	Student assessment methods outdated or unjust
EVASION 6	Didactic-pedagogical deficiency of teachers
EVASION 7	Poorly equipped teaching laboratories
EVASION 8	Out of date Bibliographic collection
EVASION 9	Poor quality of service to students
EVASION 10	Bad concept of the course in general test
EVASION 11	High monthly charge
EVASION 12	Momentary financial hardship
EVASION 13	Other personal issues

Source: Data elaborated by the authors.

What transpires is that few surveys have been conducted to elucidate the reasons for students throughout Brazil to "abandon" an undergraduate or even "delay" the date of graduation. It is, therefore, urgent to establish a system of evaluation that can diagnose this situation in different regions of the country.

RESULTS

Reasons for the Choice of the Higher Course
Table: 7 reports the self-worth and the percentage of the variance of the self-worth. There has, therefore, the power of explanation for each one of the variables. The components are prioritized in relation to the power of explanation of the phenomenon. The self-worth assesses the contribution of the factor to the model built by factor analysis, with a small value suggests small contribution of the factor in the explanation of the variations of the original variables.

Table: 7
Total of the explained variance: Extraction Method: Main Components Analysis

Component	Initial self-worth		
	Total	% Variance	% Accumulated
1	4.011	36.463	36.463
2	1.431	13.010	49.473
3	1.114	10.129	59.602
4	0.917	8.338	67.939
5	0.809	7.350	75.289
6	0.701	6.375	81.664
7	0.604	5.488	87.152
8	0.496	4.508	91.660
9	0.385	3.499	95.159
10	0.343	3.115	98.273
11	0.190	1.727	100.000

Source: Data elaborated by the authors.

So the first main component is greater explanation, the second main component is independent of the first, and represents the second factor explaining the variability of the phenomenon, and so on.

In the last major component has been the explanation of 100% of the variability in the data (Johnson & Wichern, 1998; Pereira, 1999; Vicini & Souza, 2005; Hair et al., 2005).

By using the *Kaiser* criterion, it was considered the factors with self-worth equal to or greater than the mean of the variances of the variables analyzed, namely self-worth greater than 1 for having been used the correlation matrix with standardized variables.

These three factors have self-worth corresponding to 36%, 13% and 10% of all self-worth of the model, which means, explain along 59.60% of the variations of the original measures.

The array of components expressed in Table: 8 reports on the load of each variable. Each issue reports on the correlation between the variable and the component.

These correlations support interpretations of factors, where the variables that have high coefficients presented in table, tend to form a factor analysis.

Table: 8
Components' spring

Variable	Components		
	1	2	3
CHOICE 1	0.451	0.019	-0.208
CHOICE 2	0.313	0.522	-0.350
CHOICE 3	0.675	0.003	0.024
CHOICE 4	0.452	0.659	0.235
CHOICE 5	0.501	0.011	0.365
CHOICE 6	0.768	-0.173	-0.329
CHOICE 7	0.800	-0.179	-0.308
CHOICE 8	0.344	0.712	0.141
CHOICE 9	0.740	-0.137	-0.352
CHOICE 10	0.677	-0.219	0.468
CHOICE 11	0.666	-0.297	0.440

Source: Data elaborated by the authors.

By examining the array of components, this is the correlation of coefficients of the variables and components. At first, the first factor there is a correlation of variables "choice 6", "choice 7" and "choice 9"; the second factor there is a correlation between the variables "choice 4" and "choice 8", in the third factor with the variable "choice 10" and "choice 11".

Table: 9
Rotation's spring

Variable	Components		
	1	2	3
CHOICE 1	0.467	0.097	0.140
CHOICE 2	0.600	-0.227	0.559
CHOICE 3	0.491	0.411	0.217
CHOICE 4	0.067	0.267	0.786
CHOICE 5	0.143	0.568	0.202
CHOICE 6	0.818	0.240	0.046
CHOICE 7	0.829	0.276	0.052
CHOICE 8	0.036	0.117	0.794
CHOICE 9	0.804	0.197	0.069
CHOICE 10	0.253	0.812	0.048
CHOICE 11	0.276	0.805	-0.031

Source: Data elaborated by the authors.

The final step of factor analysis is to verify if the factors can be interpreted in a manner consistent with the nature of the phenomena studied. The rotation matrix reported in Table 9 allows you to analyze the meaning of each major component investigating their correlations with the original variables. The magnitude of the loads in a rotation matrix reinforces the interpretation of factors. For this, the factorial array rotated to identify which variables that best correlates with each factor.Each data represents the partial correlation between the item and the rotated factor that aid the interpretation of results. *Kaiser apud Johnson* and *Wichern* (1998) suggested an analytical measure of simple structure known as normal rotation criterion.There are, therefore, the factors that influence the decision of the student in choosing a course of study at a particular higher education institution:

1st Factor: formed by the variables choice 6, choice 7 and choice 8. These variables describe the appearance of the support structure, such as libraries, appearance of physical facilities, such as classrooms and laboratories and titration of teachers. It can be understood as the variables that signal the institution's infrastructure for the development of education. 2nd Factor: formed by variables that identifies the Mission of the institution and the infrastructure for the development of research and extension activities. 3rd Factor: composed by variables that indicates the ability of the student to study at night and study and work at the same time. This factor and the student-related variables are together. The first two factors found are internal to the institution and the third factor is inherent to the student.

Reasons of the Evasion in the Higher Education
For the Analyzed Higher Education Institution

Performed the calculations and analyses to identify the reasons why students choose a particular course, this item presents the results that highlight the factors that influence the decision of scholars to abandon the course chosen.The majority of respondents (61.78%) reported that the value of the tuition fee paid for attending the course is not suitable for services received (Table 10). At first, this finding indicates that the value of the monthly has a significant influence on a student's decision to abandon a course.

Table: 10
Monthly charge appropriate for the received services

Value's influence	Frequency	Valid percentage
Yes	108	38.22
No	174	61.78
Total	282	100.00
Do not know / no answer	1	-

Source: Data elaborated by the authors.

Performed the calculations and analyses to identify the reasons why students choose a particular course, this item presents the results that highlight the factors that influence the decision of scholars to abandon the course chosen.

Nearly half of respondents did not communicate to the institution decided to interrupt his studies. In addition, Table 11 analyses verifies that there is a standard procedure to be followed for those students who wish to escape from the University system, whereas 21.2% of respondents talked with coordinators of courses, 13.78% with the academic Secretariat staff, 7.07% with the teachers of the course and only 3.18% with the educational guidance service professionals.

Table: 11
Communication to the Institution about the desire of interrupting the higher course

Communication about the evasion	Frequency	Valid percentage
No	140	50%
Yes, coordination of the course	60	22%
Yes, academic secretary	39	14%
Yes, teachers of the course	20	7%
Yes, educational orientation services	10	4%
Yes, others	9	3%
Total	278	100%
Do not know / No answer	5	

Source: Data elaborated by the authors.

Followings are the results found by extracting the core components in factor analysis. By *Bartllett* test the hypothesis that the correlations between the variables can be zero was dropped (sig=0.00). The data are suitable for factor analysis, to submit a KMO from 0.659 being that the extraction of 5 factors can explain about 70% of the data.

Table: 12
Total of the explained variance

Component	Initial self-worth		
	Total	% Variance	% Accumulated
1	3.439	26.45	26.45
2	1.958	15.06	41.51
3	1.382	10.63	52.14
4	1.198	9.22	61.36
5	1.003	7.72	69.08
6	0.826	6.35	75.43
7	0.725	5.58	81.01
8	0.687	5.29	86.30
9	0.583	4.49	90.78
10	0.469	3.61	94.39
11	0.303	2.33	96.72
12	0.243	1.87	98.59
13	0.183	1.41	100.00

Source: Data elaborated by the authors.

Table: 12 below reports the self-worth and the percentage of the variance of this self-worth. Kaiser criterion was used and was found five factors with self-worth corresponding to 26.4%, 15%, 10.6%, 9.2% and 7.7% of the total of self-worth of the model, which means, explain along 69.07% of the variations of the original measures.The components array reports the charges of each variable. Each issue reports on the correlation between the variable and the component.

Table: 13 Components' spring

Variable	Components				
	1	2	3	4	5
EVASION 1	0.261	-0.494	0.516	-0.169	0.007
EVASION 2	0.333	-0.195	0.160	-0.286	0.709
EVASION 3	0.355	-0.249	0.557	-0.025	-0.149
EVASION 4	0.506	-0.160	-0.089	0.075	0.502
EVASION 5	0.698	0.086	-0.311	-0.441	-0.227
EVASION 6	0.729	0.056	-0.367	-0.336	-0.138
EVASION 7	0.739	-0.022	0.111	0.417	-0.082
EVASION 8	0.691	0.004	0.177	0.530	-0.183
EVASION 9	0.662	0.255	-0.058	-0.287	-0.094
EVASION 10	0.616	0.069	0.033	0.231	0.060
EVASION 11	0.090	0.839	0.222	0.062	0.114
EVASION 12	0.007	0.877	0.189	0.006	0.203
EVASION 13	0.099	-0.187	-0.639	0.420	0.220

Source: Data elaborated by the authors.

These correlations support interpretations of factors, where the variables that have high loads tend to form a factor analysis (*Johnson* & *Wichern*, 1998; *Pereira*, 1999; *Hair* et al., 2005). By examining the array of components, presented in Table: 13:

Table: 14 Rotation's spring

Variable	Components				
	1	2	3	4	5
EVASION 1	0.137	-0.01	-0.314	0.654	0.248
EVASION 2	-0.039	0.096	0.008	0.182	0.845
EVASION 3	0.299	0.052	-0.103	0.645	0.066
EVASION 4	0.325	0.159	-0.069	-0.100	0.634
EVASION 5	0.133	0.902	-0.040	0.027	0.051
EVASION 6	0.210	0.855	-0.066	-0.066	0.129
EVASION 7	0.821	0.219	-0.065	0.083	0.102
EVASION 8	0.891	0.129	0.022	0.108	-0.025
EVASION 9	0.236	0.686	0.214	0.120	0.113
EVASION 10	0.575	0.251	0.092	0.012	0.200
EVASION 11	0.106	0.041	0.873	-0.022	-0.045
EVASION 12	-0.006	0.013	0.917	0.071	0.008
EVASION 13	0.255	-0.022	-0.312	-0.697	0.172

Source: Data elaborated by the authors.

The final step of factor analysis was to verify if the factors can be interpreted in a way consistent with the nature of the phenomena studied. The rotation matrix allows you to analyze the meaning of each major component investigating their correlations with the original variables. The magnitude of the loads in a rotation matrix reinforces the interpretation of factors. For this, the factorial array rotated to identify which variables that best correlates with each factor, as shown in Table: 14. There is, therefore, the factors influencing a student's decision to abandon the stage

1st Factor: Formed by the variables that measure student dissatisfaction with the laboratories and the library and indicate the importance of supporting facilities for academic satisfaction. These are internal factors to the institution;

2nd Factor: Formed by variables that measures the dissatisfaction of the scholar with the valuation methods employed by teachers with didactic-pedagogical deficiency of teachers and poor quality services. This factor includes the variables that indicate deficiencies in the teaching learning process used by teachers. These are internal factors again to the institution;

3rd Factor: Formed by variables that measure the influence of the value of the monthly in the decision to leave and the financial difficulties of the student, reflecting, therefore a factor grouping the variables that signal the socioeconomic condition of the student. These are external factors to the institution.

4th Factor: Formed by the variables depicting the wrong choice of course and the "lack of student's base" to accompany the course chosen. This factor indicates that students leave their courses because they do not have policies to keep pace with the gang, as they present learning disabilities because of a school of terrible quality. This factor reflects the individual characteristics of the student;

5th Factor: Reflects the fact students have been accepted on a course that was not his first option and tangling with outdated curriculum. This factor is also related to the individual characteristics of the student.

With the aid of multivariate statistical techniques and tools of quality was possible to understand, from the database built, researched reality. You can find the factors related to evasion of internal institution; the external environment and the individual characteristics of the student.

Proposals For The Reduction of The Evasion In The Analyzed Higher Education Institution
Many students who have left the institution not communicated his decision to leave the University System. This fact demonstrates that the concern to meet the expectations of students, through procedures that monitor continually their satisfaction does not exist in the institution analyzed or need to be improved through Institutional Assessment.

On the existence of inconsistencies in the process of quality management in the institution analyzed are presented the following proposals:

- ➢ **Invest resources in prevention activities and evaluation of the quality of the teaching/learning process: Constantly should be used in the planning of the semesters satisfaction surveys and evaluation conducted with students enrolled by identifying their perceptions, preferences and expectations. It is suggested that the Institutional Assessment is used as a tool to support planning and management. In this way, the University will follow the reasons that influence the choice of students and deploy actions aimed at continual improvement and above all, the evasion of academics. The role of collegiate courses and coordination must be enhanced, so as to be** performed a careful definition of faculty who teach in the initial periods of courses

- ➢ **Improve the physical facilities: Use existing resources to financing higher education institutions such as the program of improvement and Qualification of higher education (PMQES) and BNDES/automatic managed by *Banco Nacional de Desenvolvimento Econômico e Social* (BNDES) and the development of research activities managed by the Financier of studies and researches (FINEP). The Higher Education Institution can perform also partners with public and private institutions in the region in order to raise funds for the improvement of infrastructure;**

- ➢ **Constantly update the bibliographic collection: Develop partnerships with publishers and bookstores to buy books. Transform existing libraries in Community institution, allowing the resources with the ME.**

- ➢ **Empower permanent teachers: The institution must invest in the training and continuing education of teachers. The search for teachers with a higher academic degree should be continuous, as well as the provision of pedagogical practices update programs of teachers since, one of the factors that contribute to the evasion refers to methods for evaluating employees and didactic-pedagogical deficiency of teachers;**

- ➢ **Invest in monitoring activities: One of the factors found that influence dropout refers to academic difficulties in tracking the activities developed in the course. To minimize these problems, the institution must strengthen monitoring systems and support to students who demonstrate difficulty in learning, especially for those who are out of school for quite some time.**

- ➢ **Reduce the value of the monthly pay for academics: Use agreements and partnerships with companies and Government agencies in order to allow the reduction in the value of the tuition paid by academics who are officials of the partner companies. ‰ important to register that with the reduction of tax evasion and a consequent increase in the number of students, the recipe tends to increase, allowing a reduction in the monthly fee.**

- ➢ **Finance tuition for students: Deploying and disseminating the mechanisms and partnerships that facilitate the financing of the tuition of needy students or with financial difficulties, enabling the student to make the payment after the end of the studies, these options can be retrieved from or through Federal Government programs, as is the case of FIES (student financing fund in higher education) and the PROUNI (University for all Program), or picked up in the private bank network.**

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- ➢ **Create interdisciplinary courses: Offer common disciplines in the early stages allowing the student's training and allowing students to choose a second higher education with more information.**
- ➢ **Provide an information service to future students: Being in permanent contact with the students of the high school community in General in order to provide information about the courses offered, curricular matrix, skills and competencies and the labour market. Using information collected from employers and graduates to make for future students.**

FINAL CONSIDERATIONS

Although the Brazilian higher education sector have experienced a high growth, especially in the 90's decade, led mainly by private Higher Education Institution, there is a strong mismatch between supply and demand. With respect to the objectives proposed by the work is doable assert that complied with insofar as it has been developed and applied a method using multivariate statistics that made it possible to identify the factors that influence the withdrawal of students of Higher Education Institution object of study. The method was shown to be able to reduce the variables that explain the phenomenon investigated, making it a useful tool for continuous monitoring of managers expectations of freshmen and the difficulties and perceptions of the graduates.

The results obtained in the research with students who escaped from Higher Education Institution object of study showed that the factors that influence the choice of three Higher Education Institution. The first factor signals the institution's infrastructure for the development of education. The second factor is related to the infrastructure for the development of research and extension activities and the third factor brings together student-related variables, to highlight the possibility of attending the course chosen and work. The factors that explain the circumvention are five. The first factor identified is formed by the variables that measure student dissatisfaction with the physical infrastructure of the institution. The second factor is related to dissatisfaction with the learning teaching methodology used by teachers. The third factor reflects the financial difficulties of academics to finance his studies. The fourth factor is the difficulty that students have in monitoring the activities carried out in the course chosen and finally, it turns out that many academics leave the institution by the fact of having been admitted on a course that was not his first choice.

Finally, I concluded that the method proposed for identifying the factors that influence the choice of higher education and students' evasion using multivariate analysis can be adapted and applied in any higher education institution that cares about their students' defection.

Even when one considers the circumvention as a phenomenon caused by a variety of factors, curricular changes, teaching methodologies and improvement of evaluation processes and introduction of mechanisms for monitoring the student can greatly reduce the severity of this problem, especially in courses with high evasion rates.

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As a proposal for future work, it is recommended to apply this model in public Higher Education Institution, aiming to analyze the factors and variables that influence the evasion and the choice of undergraduate degree, especially in public Higher Education Institution that participated in the program REUNI (Restructuring and Expansion of Federal Universities).

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REFERENCES

Andrade, J. M. de, (2002). O processo de orientação vocacional frente ao século XXI: perspectivas de desafios. *Psicologia: Ciência e Profissão, 22*(3), 46-53.

Andriola, W. B. (2003). Evasão discente na Universidade Federal do Ceará (UFC): proposta para identificar suas causas e implantar um Sistema de Orientação e Informação (SOI). *Ensaio: Avaliação e Políticas Públicas em Educação, 11*(40), 332-347.

Andriola, W. B., Andriola, C. G., & Moura, C. P. (2006). Opiniões de docentes e de coordenadores acerca do fenômeno da evasão discente dos cursos de graduação da Universidade Federal do Ceará. *Avaliação e Políticas Públicas em Educação, 14*(52), 365-382.

Bean, J. P. (1983). The application of a model of turnover in work organizations to the student attrition process. *Review of Higher Education, 6*, 129-148.

Biase, E. G. (2008). *Motivos de escolha do curso de graduação: uma análise da produção científica nacional*. Dissertation [Master]-Universidade Estadual de Campinas, Campinas, Brazil.

Bryk, A. S., & Thum, Y. M. (1989). The effects of high school organization on dropping out: An exploratory investigation. *American Educational Research Journal, 26*, 353-383.

Costa, A. E. B., & Campos, H. R. (2001). Determinantes motivacionais da evasão em curso superior. *Avaliação Institucional*. Belo Horizonte: UFMG.

Christie, H., Munro, M., & Fisher T. (2004). Leaving university early: Exploring the differences between continuing and non-continuing students. *Studies in Higher Education, 29*(5), 617-36.

Goldschmidt, P., & Wang, J. (1999). When can schools affect dropout behavior? A longitudinal multilevel analysis. *American Educational Research Journal, 36*(4), 715-738.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (2005). *Análise multivariada de dados*. (5th ed.). Porto Alegre: Bookman.

Hekis, H. R. (2004). *Balanced scorecard: proposta de indicadores para monitorar e avaliar projetos pedagógicos dos cursos de graduação: o caso da Faculdade Estácio de Sá de Santa Catarina*. Thesis [Doctorate]-Universidade Federal de Santa Catarina, Florianópolis, Brazil.

Hovdhaugen, E. (2009). Transfer and dropout: different forms of student departure in Norway. *Studies in Higher Education*, *34*(1), 1-17.

Inep. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira. (2012). *Evolução do ensino superior*–1980-1998. Available in: http//www.inep.gov.br Accessed: Sep. 22, 2013.

Johnson, R. A., & Wichern D. W. (1998). *Applied multivariate statistical analysis*. (4th ed.). New Jersey: Prentice Hall.

Lee, V. E., & Burkam, D. (2003). Dropping Out of high school: the role of school organization and structure. *American Educational Research Journal*, *40*(2), 353-393.

Mizikaci, F. (2006). A systems approach to program evaluation model for quality in higher education. *Quality Assurance Education*, *14*(1), 37-53.

Palazzo, J., & Gomes, C. A. (2009). Plano de carreira e avaliação dos professores: encontros e desencontros. *Ensaio: Avaliação e Políticas Públicas em Educação*, *17*(63), 205-234.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco: Jossey-Bass.

Peixoto, M. C. L., Braga, M. M., & Bogutchi, T. F. (2000). Evasão no ciclo básico da UFMG. *Avaliação Institucional*, *3*, 7-28.

Pereira, F. C. B. (2003). *Determinantes da evasão de alunos e os custos ocultos para as instituições de ensino superior*. Thesis [Doctorate] – Universidade Federal de Santa Catarina, Florianópolis, Brazil.

Pereira, J. C. R. (1999). *Análise de dados qualitativos: estratégias metodológicas para as ciências da saúde, humanas e sociais*. São Paulo: Editora da USP.

Riehl, C. (1999). Labeling and letting go: An organizational analysis of high school students who are discharged as dropouts. *Research in Sociology of Education and Socialization*, *12*, 231–268.

Rumberger, R. W. (1995). Dropping out of middle school: A multilevel analysis of students and schools. *American Educational Research Journal*, *32*, 583-625.

Rumberger, R. W., & Thomas S. L. (2005). The distribution of dropout and turnover rates among urban and suburban high schools. *Sociology of Education*, *73*(1), 39-67.

Sampaio, R. M., & Laniado, R. N. (2009). Uma experiência de mudança da gestão universitária: o percurso ambivalente entre proposições e realizações. *Revista de Administração Pública, 43*(1), 151-174.

Schwartzman, J., & Schwartzman, S. (2002). O ensino superior privado como setor econômico. Rio de Janeiro: BNDES.

Silva, A. L. P., & Soares, D. H. P. (2001). A orientação profissional como rito preliminar de passagem: sua importância clínica. *Psicologia em Estudo, 6*(2), 115-21.

Silva, M. B. da. (2001). Reo-orientação: redefinição da escolha profissional. *Psicologia Argumento, 19*(28), 13-16.

Teachman, J. D., Paasch, K., & Carver, K. (1996). Social capital and dropping out of school early. *Journal of Marriage and the Family, 58*, 773-783.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Education Research, 45*, 89-125.

Tinto, V. (1993). *Leaving college*. (2nd ed.). Chicago: University of Chicago Press.

Vicini, L., & Souza, A. M. (2005). *Análise multivariada da teoria à prática*. Santa Maria: UFSM, CCNE.

Venturini, J. C. (2010). Percepção da avaliação: um retrato da gestão pública em uma instituição de ensino superior (IES). *Revista de Administração Pública, 44*(1), 31-53.