Bologna Process Analysis perception by students of the Technical University of Cluj-Napoca

Stoenoiu E. Carmen[1], Chiorean Lia[2], Bacali Laura[3], Abrudan Ioan[4]

[1]Technical University of Cluj-Napoca, e-mail: carmen@j.academicdirect.ro

[2]Technical University of Cluj-Napoca Chiorean.Lia@staff.utcluj.ro

[3]Technical University of Cluj-Napoca, laurabacali@gmail.com

[4]Technical University of Cluj-Napoca, abrudan.ioan@k.ro

Abstract. *The paper examines specific methods of marketing research opinions of students from Technical University of Cluj-Napoca regarding the implementation of the objectives of the Bologna Process in university. On the basis of the study state also the ability to centralize information in the form of design data output system, whether the information regarding the mode of perception and awareness of the objectives of the Bologna Process. The study examines students' perception regarding the changes produced by Bologna Process at the Technical University of Cluj-Napoca. Data collection was performed by creating and then applying a questionnaire. Students participating in the study were elected randomly by the faculty and per Specialization to ensure representative at the level of university. There have been sent questionnaires to 384 students of which 321 were returned, cumulating a sampling error of 5.47%. Analysis of the results reveal a low information of students regarding the trial of Bologna, and the benefits and advantages brought by it.*

Key words: the Bologna Process, targets, perception, students, sample.

1. INTRODUCTION

The Declaration of Sorbonne (1998) initiated the first steps for achieving a European area of higher education by attracting and active involvement of as many countries, universities [Declarația de la Sorbona, 1998].

The Declaration of Bologna since 1999, provides for the harmonization of systems of higher education by 2010, for the European Area of Higher Education [Declarația de la Bologna, 1999].

The main objectives laid down in Bologna Declaration are:
1. adoptation of a system of diplomas easy to read and compared;
2. adoption of a system based on two cycles of study;
3. implementation of a system of transferable credits;
4. promoting mobility;
5. promoting cooperation in quality assurance;
6. promoting the European dimension of higher education.

The Prague Communicate since 2001 continues the so-called "Bologna Process" by adding a further three goals in the six previously stipulated objectives:
7. lifelong learning;
8. students and higher education institutions;
9. promote the attractiveness of the European Higher Education.

Communication of Berlin in 2003 added the tenth objective namely:
10. Doctoral studies as the third cycle studies and synergy between the European Higher Education Area and European Research.

In the Bologna Process, higher education is considered public and students are considered partners in decision-making at every level (college, university, ministry, etc.).

Starting with 2004, took place a process of reform of higher education in Romanian, moment in which have begun the first steps for introducing and carrying out the main objectives of the "Bologna Process" in universities in Romania [Declarația de la Bologna, 1999].

During our four years after the implementation of the objectives of the Bologna Process in higher education, the purpose of this research was to examine the current state of knowledge by students and transformation of the implications that this process it has generated at the Technical University of Cluj-Napoca.

2. MATERIALS AND METHODS

The collect of information has been made by a method of direct research and consisted of collecting data directly from respondents, with the help of a questionnaire for students from all faculties of the Technical University in Cluj-Napoca.

The questionnaire included questions which determine the desired level of knowledge regarding the Bologna Process aims to create the European Area of Higher Education and university perception changes made by this process.

For sizing the sample size was used formula below [Balaure & all, 2000]:

$$n = \frac{t^2 \times p \times (1-p)}{e^2} \quad (1)$$

where:

n - the sample size;

t - the degree of trust corresponds to the probability that the coefficient which is guaranteed research results (degree of confidence is reflected in the statistical tables of the division of student = 1.96) default scientist; A significance level of 5%, which corresponds to a probability guarantee research results of 95%, was imposed.

p - the proportion of components in the sample holding feature of interest. Because it is difficult to estimate the value of the parameter p, we believe that this parameter is the value of 0.5.

e - permissible limit error (margin of error), a value of 5% was choose.

The sample size computed as being necessary to the study was:

$$n = \frac{t^2 \times p \times (1-p)}{e^2} = \frac{1{,}96^2 \times 0{,}5(1-0{,}5)}{0{,}05^2} = 384 \qquad (2)$$

The inclusion of students in the sample was done in several stages:

• was calculated the proportion of the of students from each faculty taking into consideration the proportion at the level of the university (Table 1);

• a random choice of inclusion of the year of study was applied;

• the specialization were chosen from all specializations existing in the faculty and the year of study (Table 2);

• the group / groups of students included to the study were choose.

Tabelul.1. The sample selected for study

FAC.	Number of students in the university. 2007-2008	The share of total (%)	Number of students sample
ARH	660	6	25
AC	1,650	16	61
C-TII	2,531	24	94
CM	1,239	12	46
ETC	1,230	12	46
IE	862	8	32
IC	659	6	24
MEC	993	10	37
SIM	541	5	20
Total	10,365		385

FAC = Faculty
ARH – Faculty of Architecture
AC – Faculty of Automation and Computer
C-TII – Faculty of Construction
CM – Faculty of Construction Machinery
ETC – Faculty of Electronics and Telecommunications
IE – Faculty of Electrical Engineering
IC – Faculty Installations in Constructions
MEC – Faculty of Engineering
SIM – Faculty of Materials Science and Engineering

When a group of students was not large enough to cover the number of students needed for specialization and faculty another group has been chosen in accordance with the methodology presented above.

Table 2. The number of students per faculty and specialization

FAC	Specialization	Number
ARH	Architecture and Urbanism	25
AC	Computers	60
C-TII	Civil Construction, Industrial and Agricultural	20
	Railway, Roads and Bridges	23
	Cadastre and Land Measurement	51
CM	Robotics	20
	Economic Industrial Engineering	12
	Industrial Engineering	14
ETC	Electronics	12
	Telecommunications	34
IE	Electrical Engineering	32
IC	Installations	24
MEC	Road Vehicles	26
	Machinery and Equipment Heat	11
SIM	Industrial Environmental Engineering	6
	Engineering and Environmental Protection in Industry	14
	TOTAL	384

The distribution of questionnaires and data collection was done at the headquarters of the Technical University in Cluj-Napoca, the research being done at all university faculties, by the scientist.

3. RESULTS AND DISCUSSION

Students were sent a number o 384 questionnaires from which only 321 were returned.

Students questioned were chosen at random from all the years of study, being predominantly the years of study three, two and one (Figure 1).

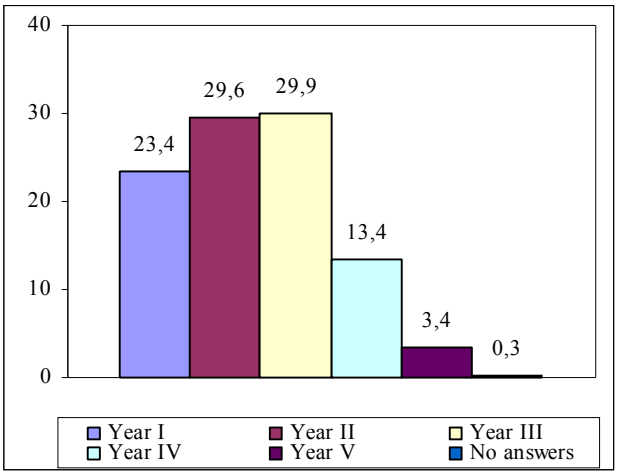

Figure 1. The sample after year study

Graphic representation of the distribution of the number of student respondents and their distribution on specializations is shown in Figure 2.

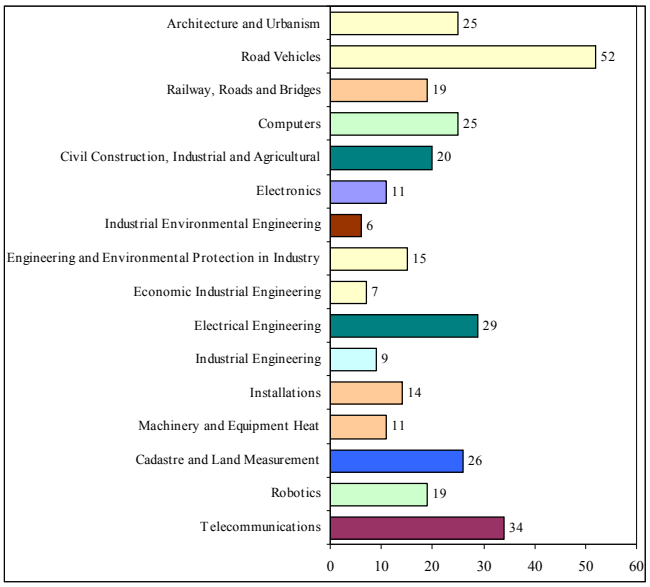

Figure 2. The students on specialization

The number of answer and no answers associated with the 321 completed questionnaires are published in Table 3.

Table 3. The situation of the number of answers and no answers to questions about Bologna Process

Question	Answers	Non answers	TOTAL
S1	321	0	321
S2.a	130	191	321
S2.b	129	192	321
S2.c	127	194	321
S2.d	126	195	321
S2.e	126	195	321
S2.f	124	197	321
S2.g	128	193	321
S3	321	0	321
S5.a	126	195	321
S5.b	125	196	321
S5.c	124	197	321
S5.d	123	198	321
S5.e	119	202	321

The sampling error for the survey research was conducted by [Cătoiu, 2002]:

$$e_{\text{e studenti}} = t \times \sqrt{\frac{p(1-p)}{n}} = 1,96 \times \sqrt{\frac{0,5(1-0,5)}{321}} = 5,47\% \quad (3)$$

As the number of respondents was not equal to the number of questionnaires distributed, the sampling error was increased over the proposed (5%), with a value of 5.47%.
For each question and answer way was quantified the share of those who responded with "YES" or "NO" to dichotomic questions, as well as the response to possible variations, with answers to questions type scale of importance.

From an analysis of responses given by students interviewed in relation to the question S1 "Do you know Bologna Process aim to create the European Area of Higher Education?", it is noticed a poor documentation of their connection with the Bologna Process.

From the total students questioned, a number of 132 students have proven to have knowledge related to Bologna (Figure 3).

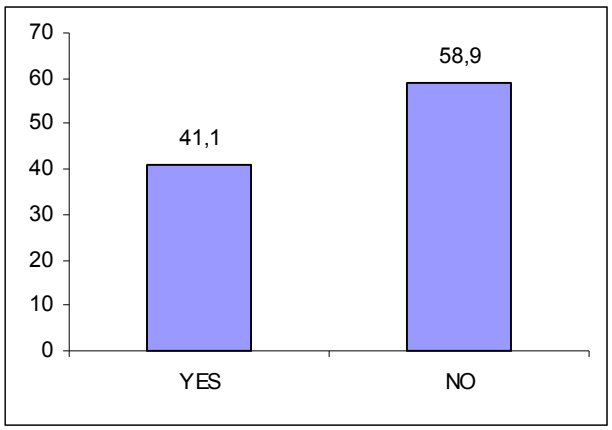

Figure 3. The relative frequency of responses to the question S1

The second question questionnaire:" How aware are you of the goals of the process of creating a European Area of Higher Education?" investigated the possibilities response for:
S2.a the system of diplomas recognition,
S2.b the system of cycles DML (Master License—PhD),
S2.c the system of transferable credits European – ECTS,
S2.d promoting the mobility of students,
S2.e promoting mobility teachers,
S2.f promoting European cooperation in quality assurance,
S2.g promoting the European dimension of higher education.
Investigation objectives has been achieved on a scale from 1 to 5 (1 = not at all, 5 = highly measure)

At the question S2, the total number of respondents found that a significant share, between 60-86% know "in average measure", „in large measure" and "very largely" Bologna Process aims to questions from a-d, which is a positive aspect (figures 4-7).

A share of between 39-55% of students interviewed said that they know these issues "nothing" or "little" for e-g (figures 8-10).

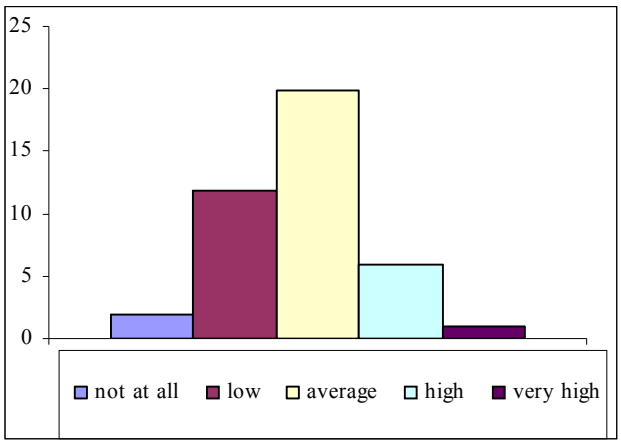

Figure 4. The recognition of diplomas (S2.a)

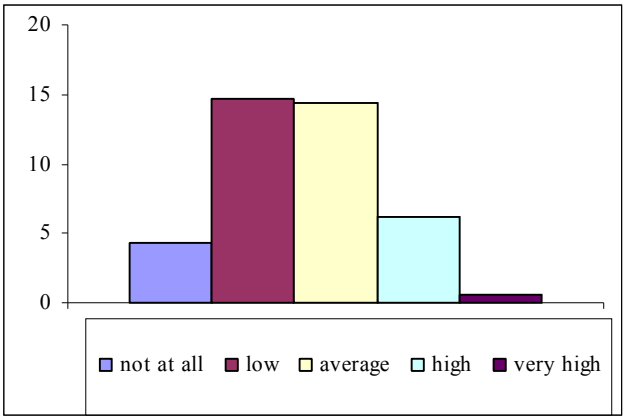

Figure 5. The cycle-Master License-Doctorate (S2.b)

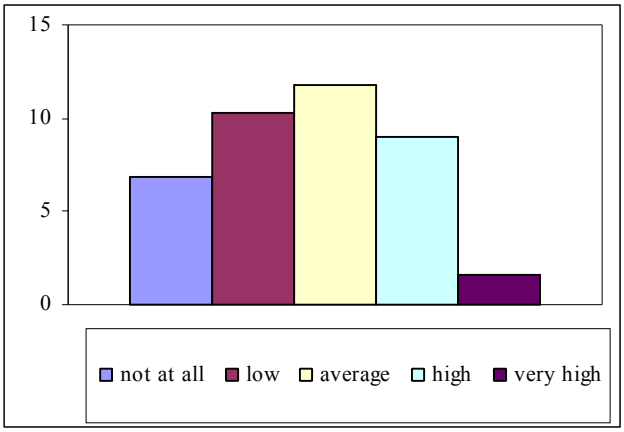

Figure 6. The transferable credits (European S2.c)

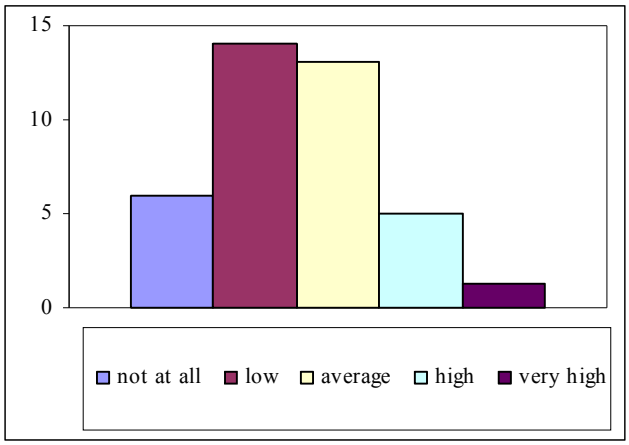

Figure 7. Promoting the mobility of students (S2.d)

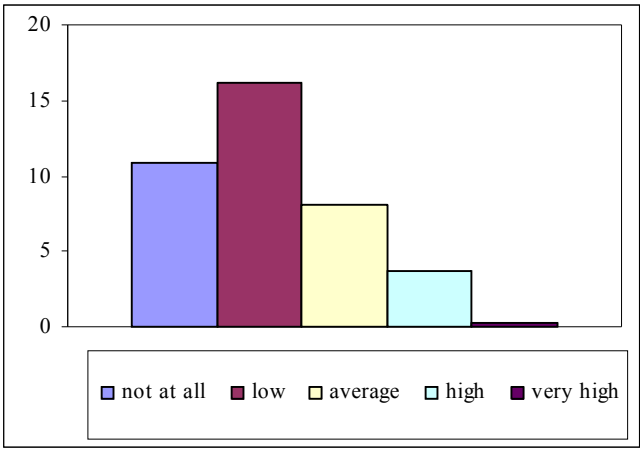

Figure 8. Promoting the mobility of teachers (S2.e)

)

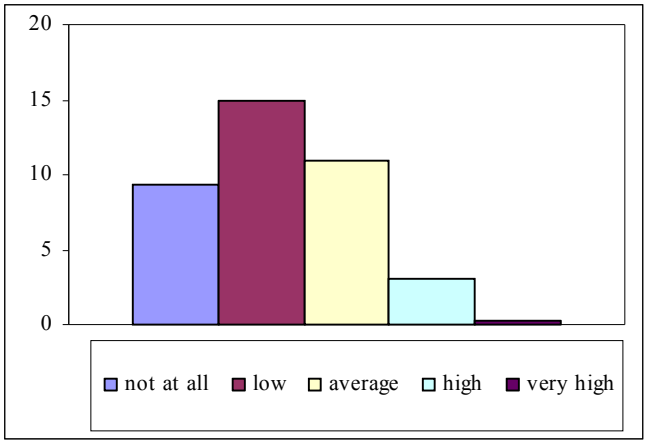

Figure 9. Promoting European cooperation in quality assurance (S2.f)

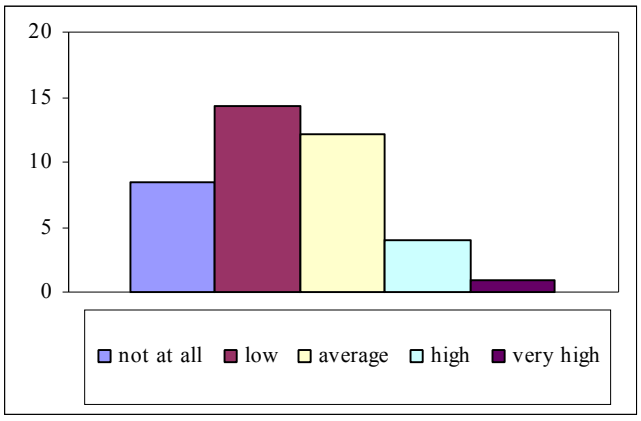

Figure 10. Promoting the European dimension of higher education (S2.g)

Making an overall analysis of the responses given by students to question S2 it is obtained the scope of coverage, respectively the modal perception of the student at Technical University in Cluj-Napoca against objectives "Bologna Process" (figure 11).

Also of this analysis it is found that among students who answered yes to the question S1, 82% know the objectives Bologna Process.

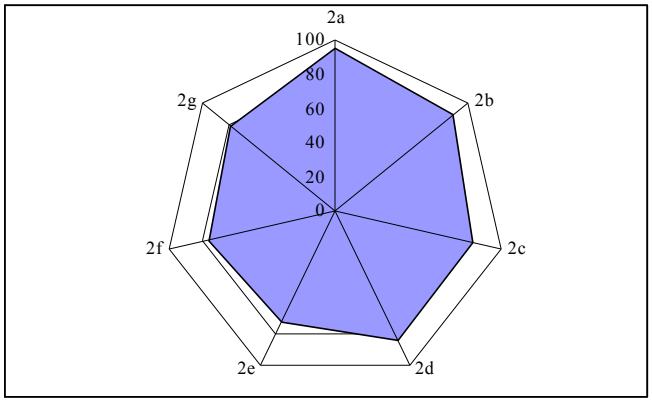

Figure 11. The coverage area of the responses given by students to question S2 (a-g)

Reviewing the correlation that might exist between the answers given by students to question S2 and to question S5, with Spearman correlation coefficient, the following the correlation coefficients were obtained (Table 4).

Table 4. Spearman correlation Coefficients to question S2

		S2.a	S2.b	S2.c	S2.d	S2.e	S2.f	S2.g
	ρ	1.000	0.336	0.353	0.256	0.179	0.241	0.310
	p	0.000	0.000	0.000	0.004	0.046	0.007	0.000
S2.a	N	130	129	126	125	125	123	127
	ρ	0.336	1.000	0.289	0.400	0.422	0.252	0.291
	p	0.000	0.000	0.001	0.000	0.000	0.005	0.001
S2.b	N	129	129	126	125	125	123	127
	ρ	0.353	0.289	1.000	0.521	0.401	0.095	0.104
	p	0.000	0.001	0.000	0.000	0.000	0.296	0.247
S2.c	N	126	126	127	124	124	122	125
	ρ	0.256	0.400	0.521	1.000	0.607	0.328	0.272
	p	0.004	0.000	0.000	0.000	0.000	0.000	0.002
S2.d	N	125	125	124	126	123	122	124
	ρ	0.179	0.422	0.401	0.607	1.000	0.511	0.382
	p	0.046	0.000	0.000	0.000	0.000	0.000	0.000
S2.e	N	125	125	124	123	126	121	124
	ρ	0.241	0.252	0.095	0.328	0.511	1.000	0.688
	p	0.007	0.005	0.296	0.000	0.000	0.000	0.000
S2.f	N	123	123	122	122	121	124	124
	ρ	0.310	0.291	0.104	0.272	0.382	0.688	1.000
	p	0.000	0.001	0.247	0.002	0.000	0.000	0.000
S2.g	N	127	127	125	124	124	124	128
	ρ	0.192	0.339	0.018	0.096	0.158	0.164	0.145
	p	0.033	0.000	0.845	0.297	0.087	0.077	0.113
S5.a	N	123	122	120	119	119	117	121
	ρ	0.111	0.340	0.176	0.210	0.141	0.200	0.238
	p	0.224	0.000	0.055	0.022	0.127	0.031	0.009
S5.b	N	122	121	119	119	118	116	120
	ρ	0.253	0.376	0.157	0.145	0.074	0.174	0.188
	p	0.005	0.000	0.089	0.117	0.430	0.063	0.040
S5.c	N	121	120	118	118	117	115	119
	ρ	0.277	0.405	0.150	0.113	0.078	0.026	0.038
	p	0.002	0.000	0.106	0.227	0.402	0.785	0.681
S5.d	N	120	119	118	116	117	115	119
	ρ	0.087	0.242	-0.145	-0.013	0.068	0.044	0.013
	p	0.355	0.009	0.125	0.890	0.474	0.647	0.892
S5.e	N	116	115	113	113	112	110	114

ρ – correlation coefficient of Sperman;
p – level of significance;
N - valid sample volume;
yellow - the level of correlation for α = 1%;
green - high degree of correlation, for α = 1%;
α - the threshold of significance

From analysis of data above is found that the most significant correlation is that given by the answers to every question S2.c – d; d-e; e-f; f-g;

The correlation between the question S2 and the question S5 is given by S5.a – S2.b; S5.b – S2.b; S5.b – S2.g; S5.c – S2a şi b; S5.d - S2a şi b; S5.e – S2.b.

The question S3: "The creation of the European Higher Education has produced changes in the university?",has been investigating how perception changes achieved through implementation of the objectives of this process Technical University, and whether these changes exist.

From an analysis of responses,it has been bnoticed that from the 132 students who answered yes to question S1, a number of 75 students responded that there are changes in the university (figure 12).

The large number of non-answers given in the greatest measure of the 189 students who responded negatively to the question S1, since this question was that type cascade saltul allowed to question S5.

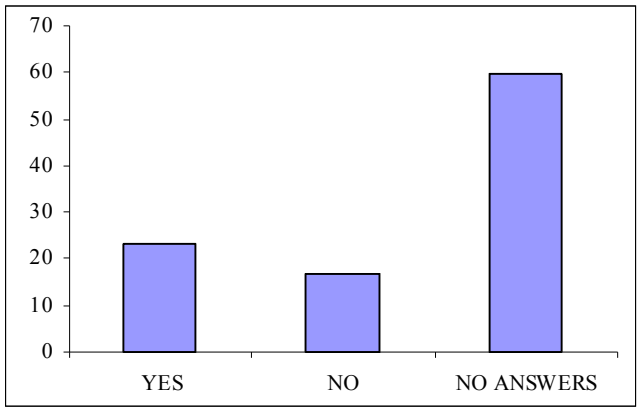

Figure 12. Cast answers to the question S3

At the question S4 the students were asked to list three of the changes they deemed to have occurred in the Technical University after the transition to higher education in the "Bologna system" and we have obtained the views presented in figure 13.

It is remarked that most students noticed the changes produced by reducing the period of study and the system of transferable credits.

By the question S5 were analyzed answers of students regarding how they predicts that changes will occur in some areas (S5. Do you consider that the changes resulting from the European Higher Education will be from the viewpoint ....?).

The following response options were quantified on a scale from 1 to 5 (1 = not at all, 5 = highly measure):

S5.a) quality
S5.b) financial
S5.c) administrative
S5.d) University curricula
S5.e) methods of teaching.

The data analysis was a pesimistic forecast because the percentage of positive changes are expected to produce, which resulted from answer variations: “in average measure”, “in large measure” and" “very largely” was between 23 -29%, maximum 29% found the possibility of change in university curricula (S5.e).

Also in question S5 was recorded the highest rate of non answers, worth between 61-63% of all from a-e, which dem-

onstrates a poor knowledge and even the possibility of lack of interest in these issues (Figure 14-18).

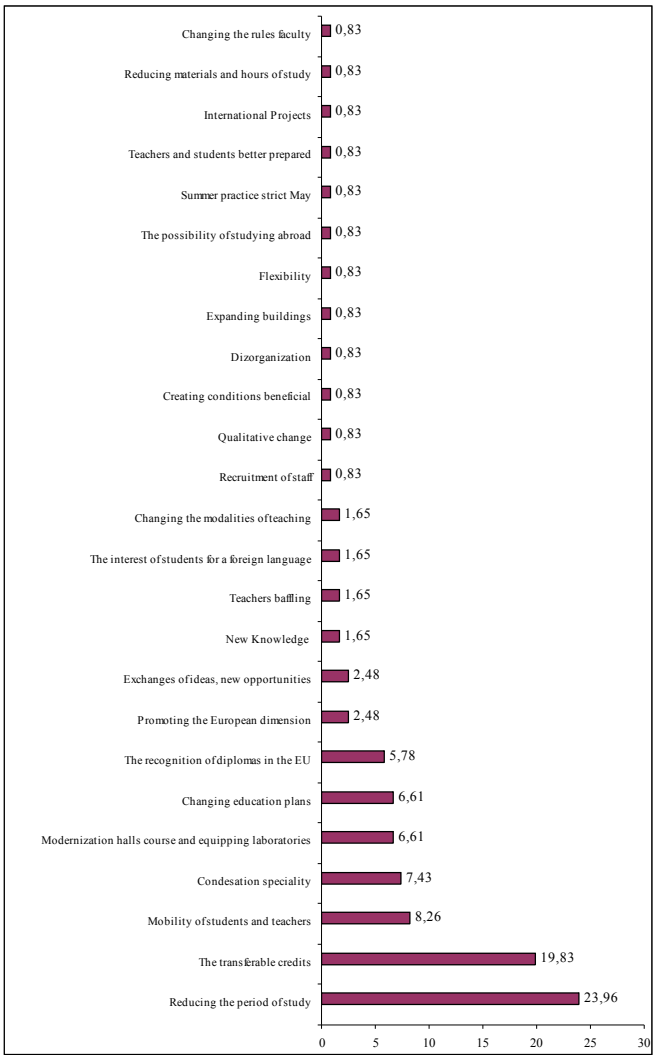

Figure 13. Cast responses to the question S4

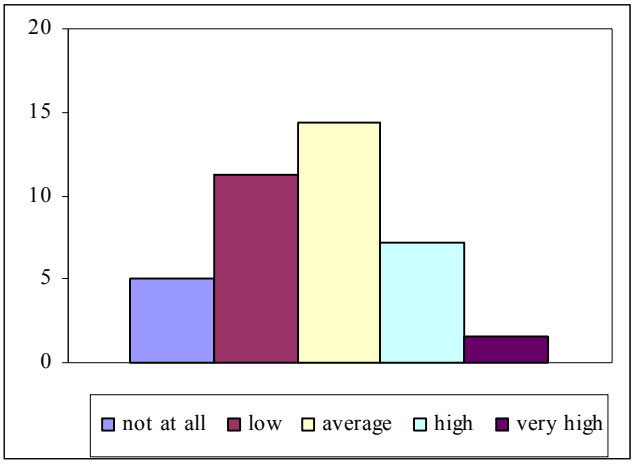

Figure 14. Cast responses to the question S5.a

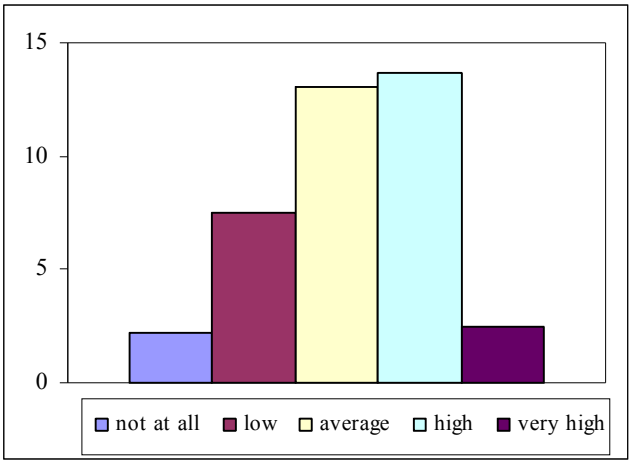

Figure 15. Cast responses to the question S5.b

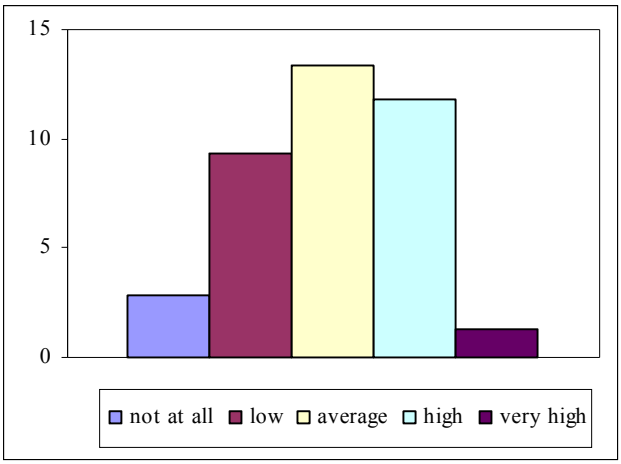

Figure 16. Cast responses to the question S5.c

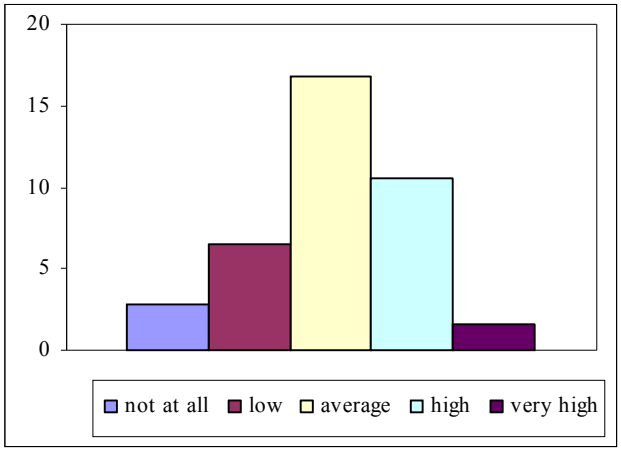

Figure 17. Cast responses to the question S5.d

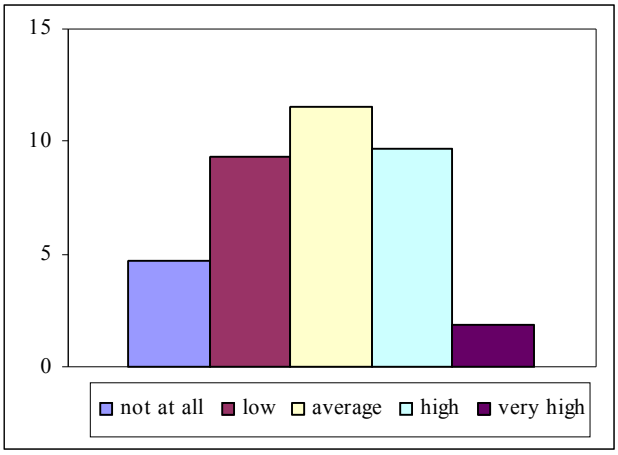

Figure 18. Cast responses to the question S5.e

Making an overall analysis of the responses given by students to question S5 it is obtained the coverage area of approximately 35%, which measures the modal perception of the student at Technical University in Cluj-Napoca against changes that will be generated by "The Bologna process "figure 19).

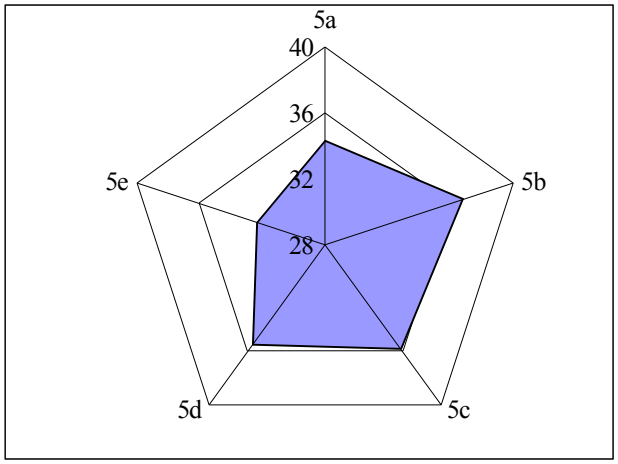

Figure 19. The coverage area of the responses to S5 (a-e)

The link that existed between the answers given by the students to question S5, calculated using Spearman correlation coefficient is given by the correlation coefficients in Table 5.

.

Table 5. Spearman correlation coefficients to question S5

		S5.a	S5.b	S5.c	S5.d	S5.e
	ρ	0.192	0.111	0.253	0.277	0.087
	p	0.033	0.224	0.005	0.002	0.355
S2.a	N	123	122	121	120	116
	ρ	0.339	0.340	0.376	0.405	0.242
	p	0.000	0.000	0.000	0.000	0.009
S2.b	N	122	121	120	119	115
	ρ	0.018	0.176	0.157	0.150	-0.145
	p	0.845	0.055	0.089	0.106	0.125
S2.c	N	120	119	118	118	113
	ρ	0.096	0.210	0.145	0.113	-0.013
	p	0.297	0.022	0.117	0.227	0.890
S2.d	N	119	119	118	116	113
	ρ	0.158	0.141	0.074	0.078	0.068
	p	0.087	0.127	0.430	0.402	0.474
S2.e	N	119	118	117	117	112
S2.f	ρ	0.164	0.200	0.174	0.026	0.044
	p	0.077	0.031	0.063	0.785	0.647
	N	117	116	115	115	110
	ρ	0.145	0.238	0.188	0.038	0.013
	p	0.113	0.009	0.040	0.681	0.892
S2.g	N	121	120	119	119	114
	ρ	1.000	0.436	0.532	0.378	0.505
	p	0.000	0.000	0.000	0.000	0.000
S5.a	N	126	125	124	123	119
	ρ	0.436	1.000	0.451	0.366	0.258
	p	0.000	0.000	0.000	0.000	0.005
S5.b	N	125	125	124	122	119
	ρ	0.532	0.451	1.000	0.392	0.296
	p	0.000	0.000	0.000	0.000	0.001
S5.c	N	124	124	124	121	118
	ρ	0.378	0.366	0.392	1.000	0.405
	p	0.000	0.000	0.000	0.000	0.000
S5.d	N	123	122	121	123	116
	ρ	0.505	0.258	0.296	0.405	1.000
	p	0.000	0.005	0.001	0.000	0.000
S5.e	N	119	119	118	116	119

ρ – correlation coefficient of Sperman;
p – level of significance;
N - valid sample volume;
yellow - the level of correlation for α = 1%;
green - high degree of correlation, for α = 1%;
α - the threshold of significance

From the analysis of the structural organization of the population interviewed using the demographic criteria depending on the age, it has been registered a rate of 45% of students aged between 18-21 years, 41% of students aged between 21-24 years, 5% students aged over 21 years, and a rate of 2.5% of the students who have registered non answers, who have not answer the age questionnaire.

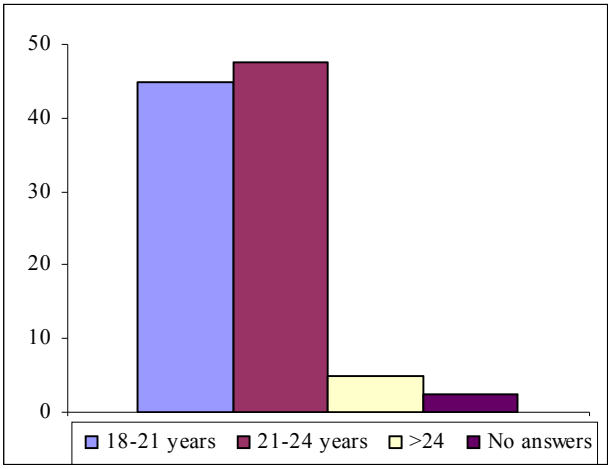

Figure 20. Distribution of students by age

From an analysis by age of the respondents it is found that the largest share represents a range aged 21-24 years, followed by the age of 18-21 years (figure 20).

4. CONCLUSIONS

Analyzing the responses given by students to question S1 of the questionnaire, it is found that 59% responded negatively, which means an ignorance of the "Bologna Process" by students.

The question S2, among respondents who answered yes to question S1, a ratio of 80% know the objectives of "Bologna Process" included at a-d and approximately 60% of students they know from e-g.

The existence or absence of changes in the university, quantified by the answers given to question S3 shows that

they exist, are respectively 57% respondents, among those who answered yes to question S1.

The question S4 has made 25 different answers.

Being a free-response question gave an opportunity to respond differently.

It was found that only 63 people have listed the changes that are produced in the university with answers from one to three, a largely avoided an answer to this question.

A ratio of 48% of students gave answers to this question and 52% have not given any reply.

By the possibility of assessing modalities that will produce changes in the university on the question S5, it was noticed a significant number of non answers and a percentage of between 30-35% of those who says that these changes will be (those who responded on the scale of importance from the possibility of "small extent" up to those who answered "largely").

Calculating the correlation coefficient between the questions and S2 to S5, it was found that the answers had some corelations (table 4 and 5).

The population studied, 96.3% is currently during in the university years I-IV, namely those who are part of higher education subject to changes resulting from Bologna Process, which should entail a greater knowledge objectives of this process.

5. REFERENCES

[1] V. Balaure, (coordonator), *Marketing*, Editura Uranus, Bucureşti, 2000.

[2] I. Cătoiu, *Cercetări de marketing*, Editura Uranus, Bucureşti, 2002.

[3] E. Titan, S. Ghita, C. Trandas, *Statistica Aplicata*, Editura Meteor Press, Bucureşti, 2005.

[4] R. Todericiu, *Managementul universitar din perspectiva europeană si a globalizării*, Teza de doctorat, Universitatea „Lucian Blaga" din Sibiu, 2007.

[5] Declarația de la Sorbona, 1998, http://www.cnfis.ro/fd/bologna/documente/declSorbonne.pdf.

[6] Declarația de la Bologna, 1999, http://www.bologna.ro.