

A STATISTICAL SURVEY UPON THE M.Sc. STUDENTS' SATISFACTION REGARDING THE EDUCATIONAL PROCESS

Tiberiu-Marius Karnyanszky, Corina Muşuroi

“Tibiscus” University of Timișoara, Romania

Corresponding author: Tiberiu-Marius Karnyanszky, mtk2004@gmail.com

ABSTRACT: After presenting ([KM14]) a survey using the expert system implemented at the “Tibiscus” University of Timisoara, Romania, applied for at least five years to analyze the quality assessment of the educational process, compulsory made by the students at our university using an online web-based application and based on the requirements of the Romanian Agency for Quality Insurance in Higher Education (ARACIS), we're now introducing the results of a survey upon the Computer Science master students. The results of the statistical analysis are used on departments to ensure the transparent policy of the educational high education evaluation. The application allows first the evaluation by students, then the interpretation of the results and finally the study of the evolution of the results. The mathematical apparatus we're using are statistical indicators as the average, the mean squared deviations, the class values, the correlations and others. We continue to suggest that a widely implementation of our solution permits to have the same evaluation system in all universities and, by consequence, a unitary insight to the higher education level.

KEYWORDS: quality assessment, quality assurance, M.Sc., high education, statistical processing.

1. INTRODUCTION

The periodical assessment of the [B.Sc., M.Sc.] students satisfaction regarding the educational process we are presenting bases on the stipulations of the ARACIS, implemented in our university as web applications ([CK07, KM14, KLA12, K+07, K+10, TKS08]) separately for the evaluation of the teaching staff and of the educational process.

The processed results are discussed at departments and university management to ensure an improvement of the educational process.

These results are also openly presented on the university web site, accessible for the targeted users (students, candidates) and for the other parts of the educational process (stakeholders, authorities, actions also proposed in [Fur12, PPV10, P+10, Sko10]).

Regarding the assessment of the educational process, it bases on a questionnaire with 15 topics regarding the endowment, the contents of study, the learning outcomes and the accessibility of learning resources: *Q.1: Student-centered learning methods; Q.2: Practical application of the knowledge; Q.3:*

Possibility of course selection; Q.4: Audio-video and computers, Q.5: Student services; Q.6: Availability of learning resources; Q.7: Library access; Q.8: Career guidance to students; Q.9: Partnerships with other universities; Q.10: Quality of teaching; Q.11: Availability of staff; Q.12: Furniture; Q.13: Recreational spaces; Q.14: Educational spaces; Q.15: Structure of the study program.

The results of the evaluation for the Computer Science M.Sc. programs between 2011 and 2015 are presented in tables 1 to 4 and figures 1 to 4. A statistical processing ([SP09]) of the results from Table 1 shows that:

- both means (4.50 for 1st year and 4.46 for the 2nd study year) are very close to the totally mean (of all study years, 4.47);
- only at Q.5 and Q.13 are visible differences between the two study years (4.38 beside 3.84 / 4.18 beside 3.67);
- almost all the averages are around 4.50 indicating a good to very good opinion;
- the standard deviations are low (0,71; 0,73) and close to the totally standard deviation (0,73).

For the 2011/2012 year, as presented in Figure 1, there are no “1” (=insufficient) answers excepting Q.5; the “2” (=sufficient) and “3” (=medium) answer are rarely present (again - Q.5). The “4” (=good) and “5” (=very good) answers predominate, with a predominance of “5”.

For the 2012/2013 year (Figure 2), there are no “1” answers excepting Q.5 and Q.13; again the “2” and “3” answer is rarely present (except Q.5). The “4” and “5” answers predominate, with a predominance of “5”.

For the 2013/2014 year (depicted in Figure 3), there are no “1” answers excepting Q.5 and Q.13; the “2” answer is rarely present (Q.3, Q.8, Q.12, Q.13); the “3” answer is less than 10%; the “4” and “5” answers predominate, with more than 50% for the “5” answers.

As regarding the 2014/2015 year (Figure 4), the “1” answers are missing; the “2” answers are rarely present (Q.8, Q.12, Q.13); the “3” answer is again less than 10%; the “4” answers are around 20-25% but the “5” answers predominate with more than 60%.

Table 1. The answers' aggregate for the 2011/2012 year

Q.	1 st year (11 respondents)						2 nd year (20 respondents)						Totally (31 respondents)								
	1	2	3	4	5	Med	St.D.	1	2	3	4	5	Med	St.D.	1	2	3	4	5	Med	St.D.
Q.1	0	0	0	3	8	4.73	0.47	0	0	0	6	14	4.70	0.47	0	0	0	9	22	4.71	0.46
Q.2	0	0	1	3	7	4.55	0.69	0	0	1	5	14	4.65	0.59	0	0	2	8	21	4.61	0.62
Q.3	0	0	1	1	8	4.70	0.67	0	1	0	6	13	4.55	0.76	0	1	1	7	21	4.60	0.72
Q.4	0	0	1	2	8	4.64	0.67	0	0	0	6	14	4.70	0.47	0	0	1	8	22	4.68	0.54
Q.5	0	0	1	3	4	4.38	0.74	1	1	4	7	6	3.84	1.12	1	1	5	10	10	4.00	1.04
Q.6	0	0	0	3	8	4.73	0.47	0	0	1	2	17	4.80	0.52	0	0	1	5	25	4.77	0.50
Q.7	0	0	1	5	5	4.36	0.67	0	0	1	7	12	4.55	0.60	0	0	2	12	17	4.48	0.63
Q.8	0	1	0	3	6	4.40	0.97	0	2	1	4	11	4.33	1.03	0	3	1	7	17	4.36	0.99
Q.9	0	0	2	1	8	4.55	0.82	0	2	1	5	10	4.28	1.02	0	2	3	6	18	4.38	0.94
Q.10	0	1	1	5	4	4.09	0.94	0	0	1	5	11	4.59	0.62	0	1	2	10	15	4.39	0.79
Q.11	0	0	2	3	6	4.36	0.81	0	0	3	4	13	4.50	0.76	0	0	5	7	19	4.45	0.77
Q.12	0	0	2	3	6	4.36	0.81	0	0	0	7	13	4.65	0.49	0	0	2	10	19	4.55	0.62
Q.13	0	1	2	2	6	4.18	1.08	1	4	3	2	8	3.67	1.41	1	5	5	4	14	3.86	1.30
Q.14	0	0	0	3	7	4.70	0.48	0	0	0	9	11	4.55	0.51	0	0	0	12	18	4.60	0.50
Q.15	0	0	0	2	8	4.80	0.42	0	0	1	6	13	4.60	0.60	0	0	1	8	21	4.67	0.55
Med.						4.50	0.71						4.46	0.73						4.47	0.73

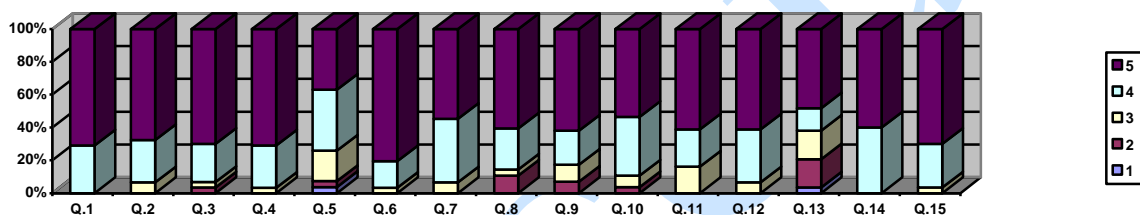


Figure 1. The means distribution for the 2011/2012 year

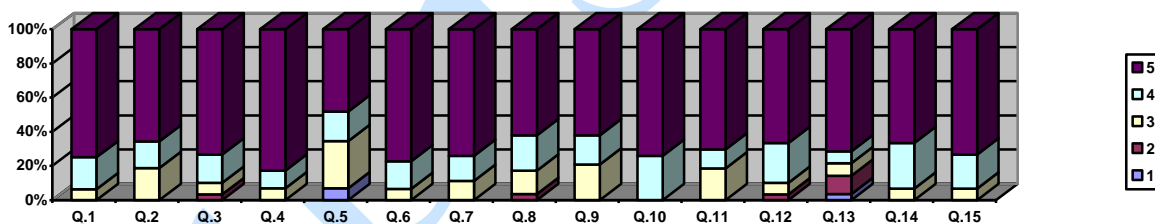


Figure 2. The means distribution for the 2012/2013 year

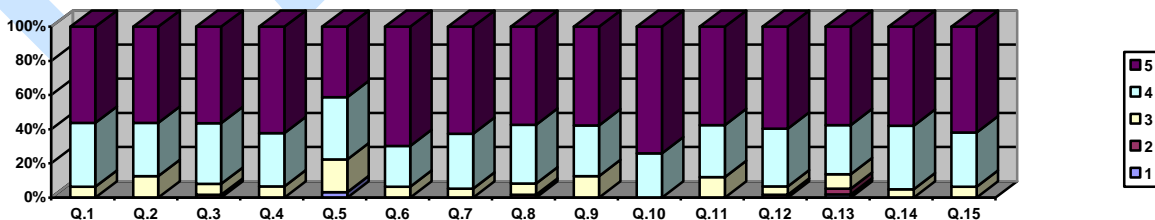


Figure 3. The means distribution for the 2013/2014 year

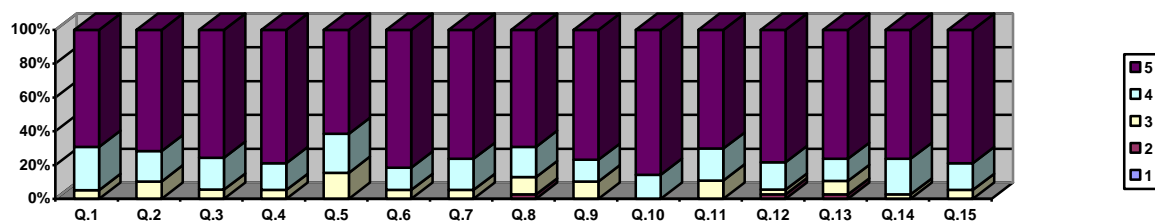


Figure 4. The means distribution for the 2014/2015 year

Table 2 presents the evolution of the answers of the students during their promotion from the 1st year (2011/2012) to the 2nd year (2012/2013) of the M.Sc. program. The totally means regress from 4.80 (=very good) to 4.65, showing a depreciation of the students' satisfaction.

Table 3 presents the evolution of the answers of the students during their 2012-2014 promotion: the totally means remains constant from 4.69 to 4.70 (=very good) to 4.65, showing the same students' satisfaction.

Table 4 presents the evolution of the answers of the students during their promotion from the 1st year (2013/2014) to the 2nd year (2014/2015). The totally means progress from 4.47 (=very good) to 4.76, showing an improvement of the students' satisfaction.

Table 2. The evolution of the answers for the 2011 – 2013 class

Q.	1 st year 2011/2012						2 nd year 2012/2013							
	1	2	3	4	5	Med	St.D.	1	2	3	4	5	Med	St.D.
Q.1	0	0	0	3	8	4.73	0.47	0	0	1	4	12	4.65	0.61
Q.2	0	0	1	3	7	4.55	0.69	0	0	3	3	11	4.47	0.80
Q.3	0	0	1	1	8	4.70	0.67	0	1	1	1	14	4.65	0.86
Q.4	0	0	1	2	8	4.64	0.67	0	0	1	3	11	4.67	0.62
Q.5	0	0	1	3	4	4.38	0.74	2	0	4	4	5	3.67	1.35
Q.6	0	0	0	3	8	4.73	0.47	0	0	1	3	13	4.71	0.59
Q.7	0	0	1	5	5	4.36	0.67	0	0	1	2	11	4.71	0.61
Q.8	0	1	0	3	6	4.40	0.97	0	1	0	4	10	4.53	0.83
Q.9	0	0	2	1	8	4.55	0.82	0	0	3	2	11	4.50	0.82
Q.10	0	1	1	5	4	4.09	0.94	0	0	0	4	10	4.71	0.47
Q.11	0	0	2	3	6	4.36	0.81	0	0	2	2	11	4.60	0.74
Q.12	0	0	2	3	6	4.36	0.81	0	0	1	5	11	4.59	0.62
Q.13	0	1	2	2	6	4.18	1.08	1	2	2	0	9	4.00	1.47
Q.14	0	0	0	3	7	4.70	0.48	0	0	1	5	10	4.56	0.63
Q.15	0	0	0	2	8	4.80	0.42	0	0	1	4	12	4.65	0.61

Table 3. The evolution of the answers for the 2012 – 2014 class

Q.	1 st year 2012/2013						2 nd year 2013/2014							
	1	2	3	4	5	Med	St.D.	1	2	3	4	5	Med	St.D.
Q.1	0	0	1	2	12	4.73	0.59	0	0	1	9	14	4.54	0.59
Q.2	0	0	3	2	10	4.47	0.83	0	0	3	6	15	4.50	0.72
Q.3	0	0	1	4	8	4.54	0.65	0	0	1	5	16	4.68	0.57
Q.4	0	0	1	0	13	4.86	0.53	0	0	1	5	17	4.70	0.56
Q.5	0	0	4	1	9	4.36	0.93	0	0	4	8	12	4.33	0.76
Q.6	0	0	1	2	11	4.71	0.61	0	0	1	4	18	4.74	0.54
Q.7	0	0	2	2	9	4.54	0.78	0	0	2	6	16	4.58	0.65
Q.8	0	0	4	2	8	4.29	0.91	0	0	4	6	14	4.42	0.78
Q.9	0	0	3	3	7	4.31	0.85	0	0	3	4	17	4.58	0.72
Q.10	0	0	0	3	10	4.77	0.44	0	0	0	4	19	4.83	0.39
Q.11	0	0	3	1	8	4.42	0.90	0	0	3	7	13	4.43	0.73
Q.12	0	1	1	2	9	4.46	0.97	0	1	0	5	16	4.64	0.73
Q.13	0	1	0	2	11	4.64	0.84	0	1	3	4	15	4.43	0.90
Q.14	0	0	1	3	10	4.64	0.63	0	0	0	7	16	4.70	0.47
Q.15	0	0	1	2	10	4.69	0.63	0	0	1	5	17	4.70	0.56

Table 4. The evolution of the answers for the 2013 – 2015 class

Q.	1 st year 2013/2014						2 nd year 2014/2015							
	1	2	3	4	5	Med	St.D.	1	2	3	4	5	Med	St.D.
Q.1	0	0	3	15	22	4.47	0.64	0	0	1	5	23	4.76	0.51
Q.2	0	0	5	14	21	4.40	0.71	0	0	2	5	22	4.69	0.60
Q.3	0	1	3	17	19	4.35	0.74	0	0	1	5	23	4.76	0.51
Q.4	0	0	3	14	21	4.47	0.65	0	0	1	5	23	4.76	0.51
Q.5	2	0	8	15	14	4.00	1.03	0	0	4	6	19	4.52	0.74
Q.6	0	0	3	11	26	4.57	0.64	0	0	1	4	24	4.79	0.49
Q.7	0	0	1	13	21	4.57	0.56	0	0	0	5	23	4.82	0.39
Q.8	0	1	0	15	21	4.51	0.65	0	0	2	5	21	4.68	0.61
Q.9	0	0	5	15	20	4.38	0.70	0	0	2	4	23	4.72	0.59
Q.10	0	0	0	12	27	4.69	0.47	0	0	0	3	26	4.90	0.31
Q.11	0	0	4	11	21	4.47	0.70	0	0	2	4	21	4.70	0.61
Q.12	0	0	3	16	21	4.45	0.64	0	0	1	6	22	4.72	0.53
Q.13	1	1	2	13	19	4.33	0.93	0	0	3	3	23	4.69	0.66
Q.14	0	0	3	16	20	4.44	0.64	0	0	1	6	22	4.72	0.53
Q.15	0	0	3	15	22	4.47	0.64	0	0	1	5	23	4.76	0.51

The general perception about the answers is that all averages prove a "good" and "very good" estimation an every single year:

- the "very good" answers represent 63% in 2011/2012, 69% in 2012/2013, 59% in 2013/2014 and 75% in 2014/2015;
- the "good" plus "very good" answers are 90% in 2011/2012, 87% in 2012/2013, 91% in 2013/2014 and 93% in 2014/2015.

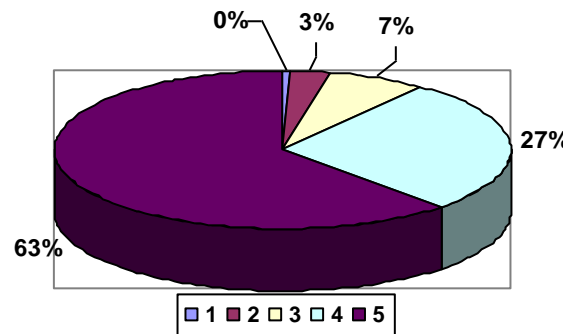


Figure 5. Percentage of the answers for the 2011/2012 students

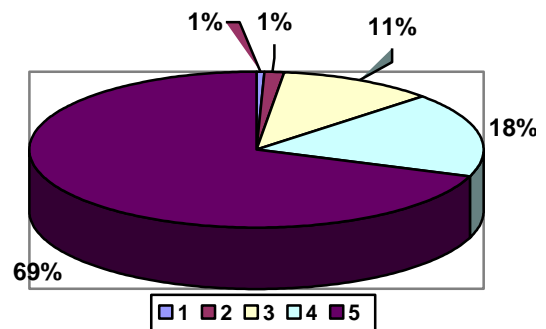


Figure 6. Percentage of the answers for the 2012/2013 students

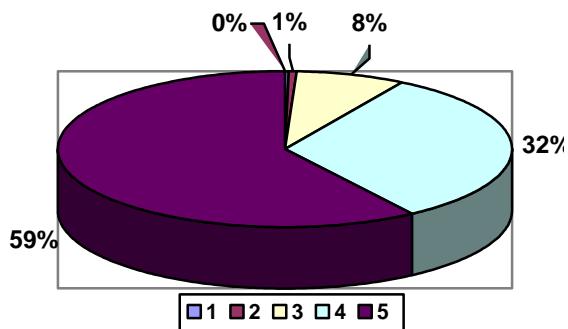


Figure 7. Percentage of the answers for the 2013/2014 students

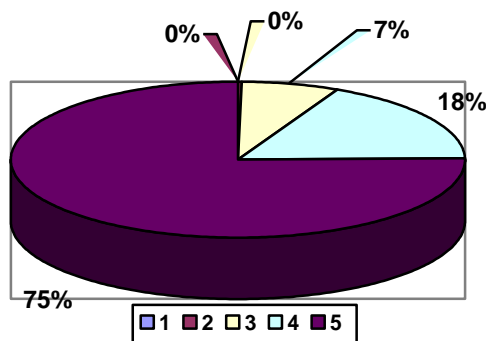


Figure 8. Percentage of the answers for the 2014/2015 students

Thereby, the “very good” answer shows an upward trend from 63% to 75% and the *satisfaction opinion* (“good”+“very good”) also increases from 90% to 93%. The means evolution shows an increase evolution of the “very good” answers for all promotions for the following questions:

- Q.3: Possibility of course selection (figure 11);
- Q.8: Career guidance to students (figure 16);
- Q.10: Quality of teaching (figure 18);
- Q.12: Furniture (figure 20).

The means evolution shows an increase of the “very good” answers for the 2011-2013 and 2013-2015 classes but a regress for the middle promotion for the following questions:

- Q.1: Student-centered learning methods (figure 9);
- Q.2: Practical application of the knowledge (figure 10);
- Q.4: Audio-video and computers (figure 12);
- Q.5: Student services (figure 13);
- Q.7: Library access (figure 15);
- Q.11: Availability of staff (figure 19);
- Q.13: Recreational spaces (figure 21).

The means evolution shows an increase of the “very good” answers for the 2011-2013 and 2013-2015 classes and constancy for the middle promotion for the following questions:

- Q.6: Availability of learning resources (figure 14).

The means evolution shows a regress for the 2011-2013 promotion then an increase of the “very good” answers for the 2012-2014 and 2013-2015 classes for the following questions:

- Q.9: Partnerships with other universities (figure 17).

The means evolution shows a regress for the 2011-2013 promotion, constancy for the middle promotion then an increase of the “very good” answers for the 2013-2015 classes for the following questions:

- Q.14: Educational spaces (figure 22);
- Q.15: Structure of the study program (figure 23).

The means evolution shows an increase evolution of the students’ positive satisfaction (“good” and “very good” answers) for all promotions at the following questions:

- Q.4: Audio-video and computers (figure 12);
- Q.5: Student services (figure 13);
- Q.7: Library access (figure 15);
- Q.9: Partnerships with other universities (figure 17);
- Q.10: Quality of teaching (figure 18);
- Q.11: Availability of staff (figure 19);
- Q.12: Furniture (figure 20).

The means evolution shows a decrease evolution of the students’ positive satisfaction for the first promotions then an increase for both promotions at the following questions:

- Q.1: Student-centered learning methods (figure 9);
- Q.2: Practical application of the knowledge (figure 10);
- Q.3: Possibility of course selection (figure 11);
- Q.6: Availability of learning resources (figure 14);
- Q.14: Educational spaces (figure 22);
- Q.15: Structure of the study program (figure 23).

The means evolution shows an increased evolution of the students’ positive satisfaction for the first two promotions then a decrease for the last promotion at the following questions:

- Q.8: Career guidance to students (figure 16).

The means evolution shows a decreased evolution of the students’ positive satisfaction (“good” and “very good” answers) for all promotions at the following questions:

- Q.13: Recreational spaces (figure 21).

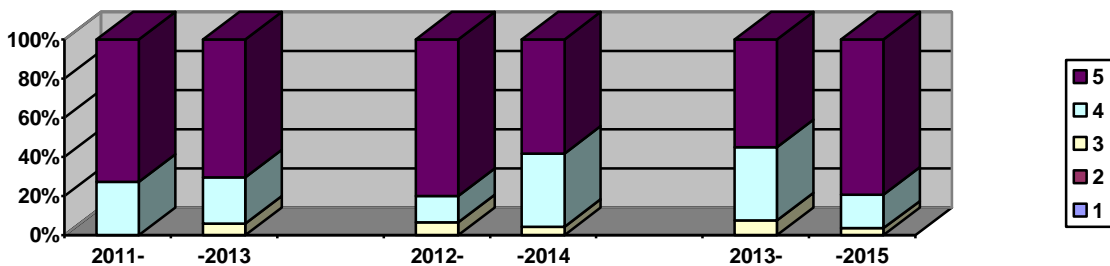


Figure 9. Evolution of the Q.1 answers during three cycles of study

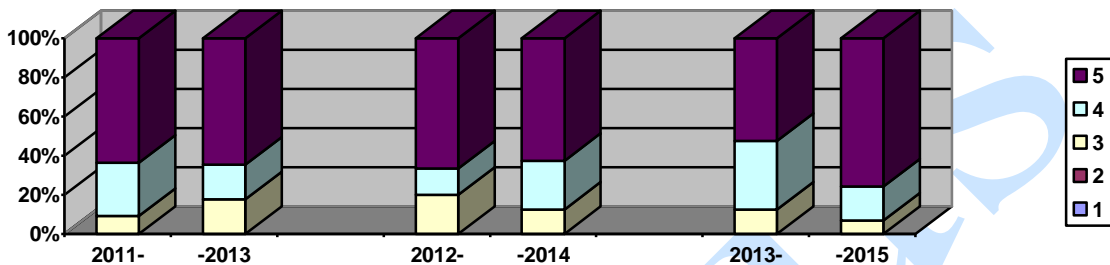


Figure 10. Evolution of the Q.2 answers during three cycles of study

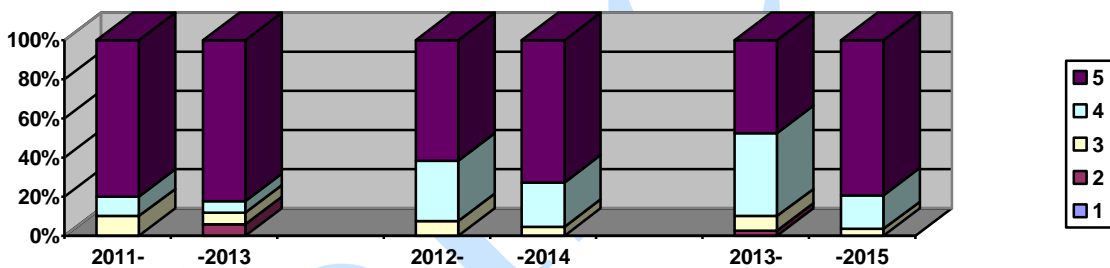


Figure 11. Evolution of the Q.3 answers during three cycles of study

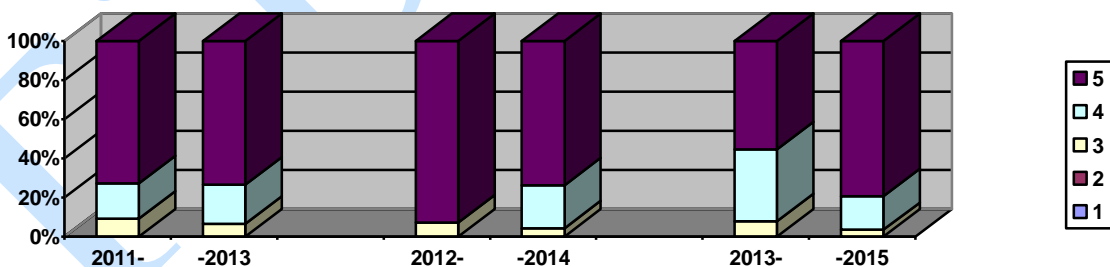


Figure 12. Evolution of the Q.4 answers during three cycles of study

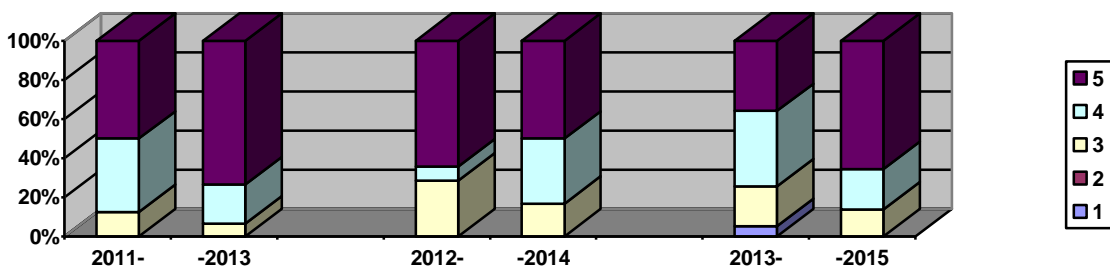


Figure 13. Evolution of the Q.5 answers during three cycles of study

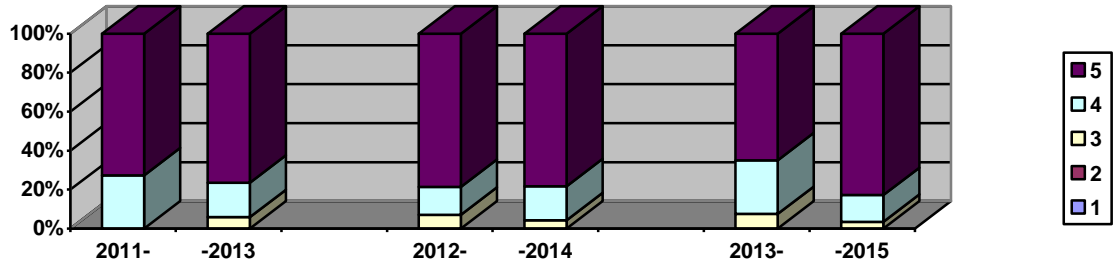


Figure 14. Evolution of the Q.6 answers during three cycles of study

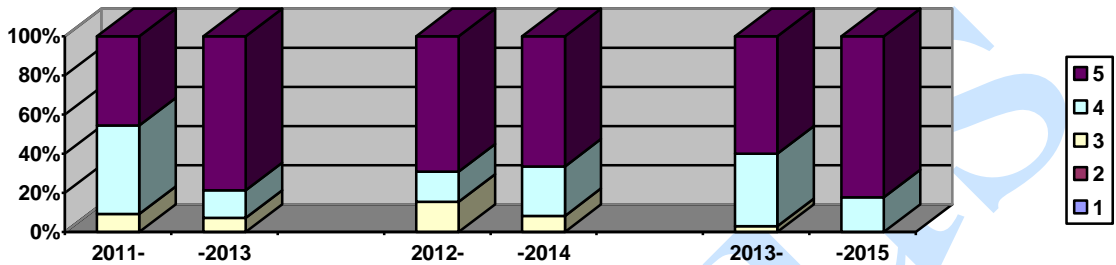


Figure 15. Evolution of the Q.7 answers during three cycles of study

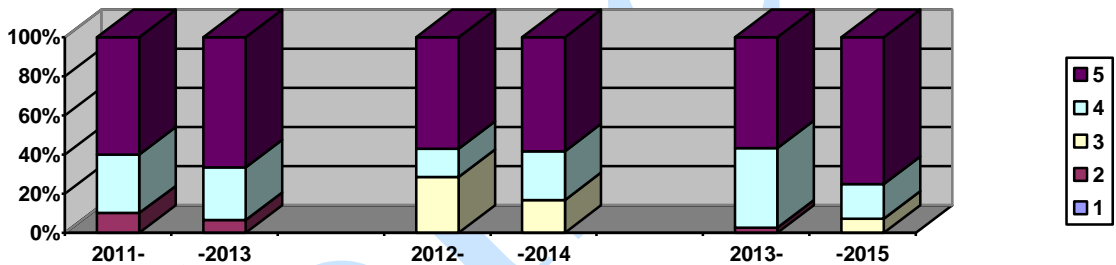


Figure 16. Evolution of the Q.8 answers during three cycles of study

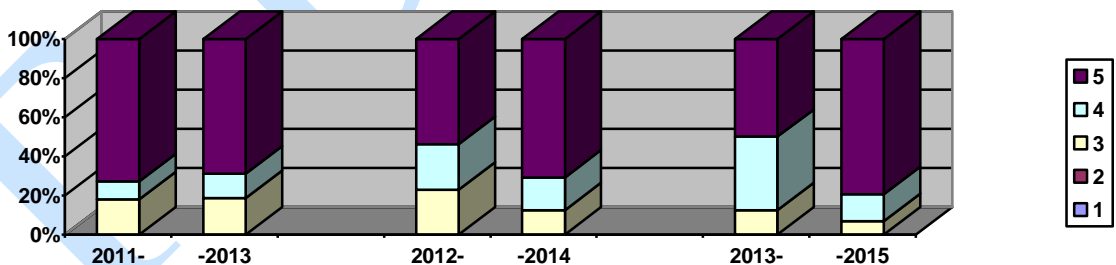


Figure 17. Evolution of the Q.9 answers during three cycles of study

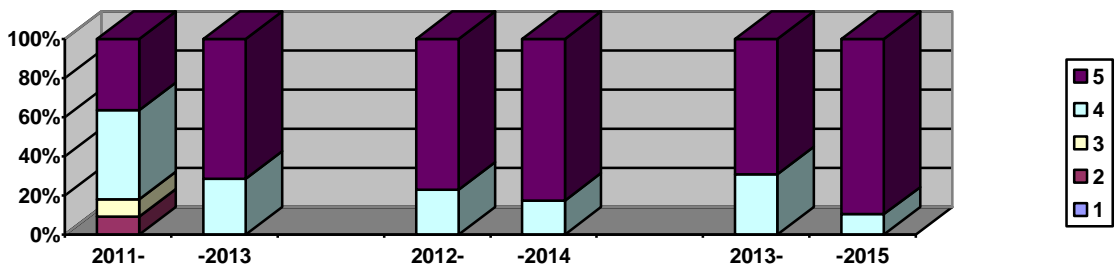


Figure 18. Evolution of the Q.10 answers during three cycles of study

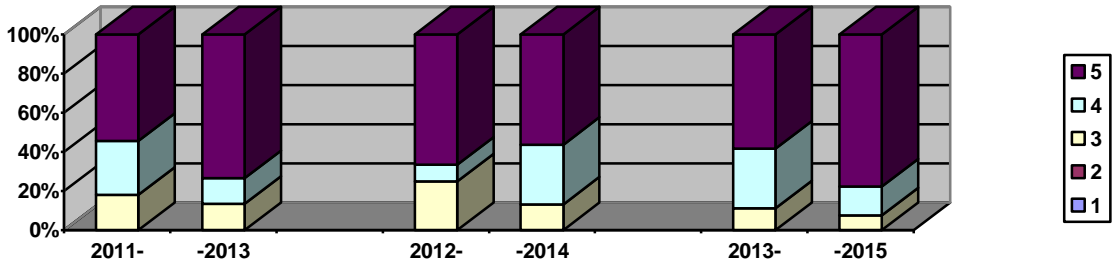


Figure 19. Evolution of the Q.11 answers during three cycles of study

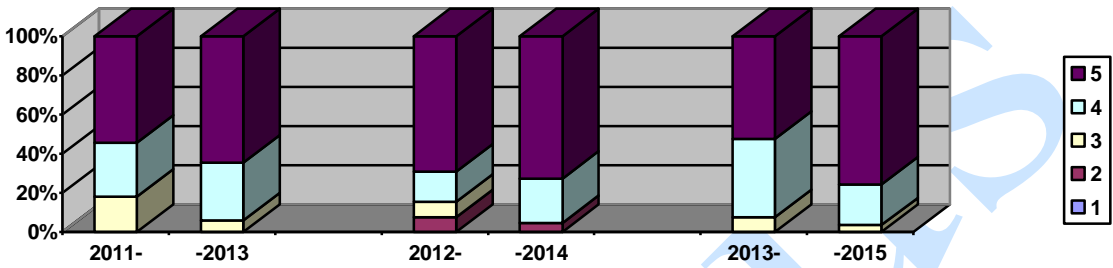


Figure 20. Evolution of the Q.12 answers during three cycles of study

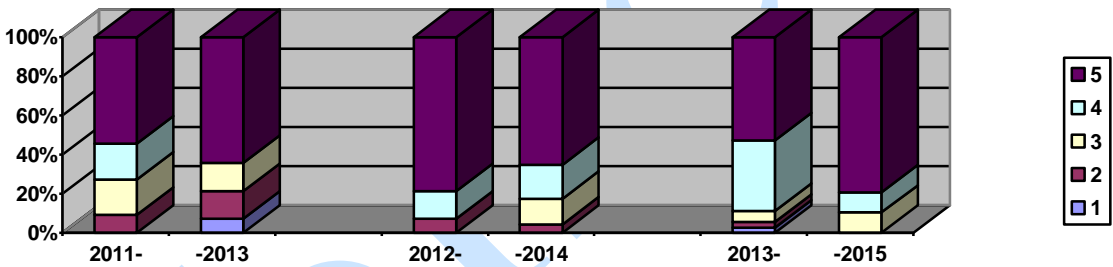


Figure 21. Evolution of the Q.13 answers during three cycles of study

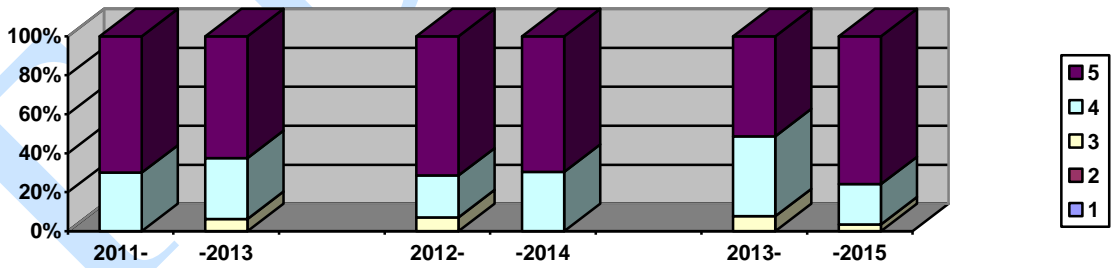


Figure 22. Evolution of the Q.14 answers during three cycles of study

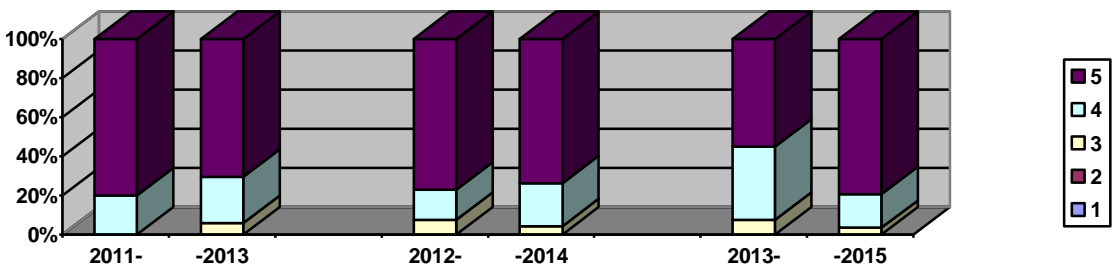


Figure 23. Evolution of the Q.15 answers during three cycles of study

CONCLUSIONS

We presented in this paper a survey upon the evolution of the M.Sc. students' satisfaction upon the educational process, using the "Tibiscus" University of Timișoara's quality assessment system.

We can conclude, from the previous data presented in tables and figures, that students' expectations are fulfilled: more than 75% of the students are satisfied (by answering "good" or "very good") about the studying conditions:

- 2011-2013 class: 85% (1st year) and 90% (2nd year) of the answers are "good" and "very good";
- 2012-2014 class: 86% and 88% of the answers are "good" and "very good";
- 2013-2015 class: 91% and 92% of the answers are "good" and "very good".

Also, the students' expectations improve during their academic route: the "good" plus "very good" answers are 90% in 2011/2012, then 87%, 91% and finally 93% in 2014/2015.

We notice in final that a continuous and almost constant improvement of the M.Sc. students' satisfaction regarding the educational process is observable.

REFERENCES

- [CK07] **O. Crista, T. M. Karnyanszky** - *Application for Evaluation of the Professional Competencies of the Teaching Staff*, Anale. Seria Informatica, vol. V, pp. 71-76, 2007.
- [Fur12] **R. Füreder** - *Quality Assurance through Internal Program Evaluation, E" Era & Higher Education*, Proceedings of the 7th International Conference Quality Management in Higher Education, Austrian Computer Society, Viena, 2012, ISBN: 978-3-85403-291-5, pp. 273-280.
- [KM14] **T. M. Karnyanszky, C. Mușuroi** - *A Statistical Survey upon the Evolution of the Students' Satisfaction Regarding the Educational Process*, Anale. Seria Informatica, vol. XII, fasc. 2, pp. 71-77, 2014.
- [KLA12] **T. M. Karnyanszky, L. D. Lacrămă, S. A. Apostol** - *Computer Aided Assessment of Students' Satisfaction Regarding the Educational Process, E" Era & Higher Education*, Proceedings of the 7th International Conference Quality Management in Higher Education, Austrian Computer Society, Viena, 2012, ISBN: 978-3-85403-291-5, pp. 39-48.
- [K+07] **T. M. Karnyanszky, L. D. Lacrămă, L. Luca, I. Iacob** - *Teacher's Evaluation - a Component of Quality Assessment System*, Anale. Seria Informatica, vol. VI, pp. 107-112, 2007.
- [K+10] **T. Karnyanszky, A. Fortiș, O. Crista, D. Lacrămă** - *Computer Aided Management of the Teaching Staff Assessment*, Proceedings of the 6th International Seminar on Quality Management in Higher Education, Book 1, pp. 87-90, 2010.
- [PPV10] **A. Purcarea, I. Purcarea, S. Visan** - *The Analysis of the Quality Assurance System at the Faculty of Commerce within Bucharest Academy of Economic Studies, in the View of the Quality Culture*, Proceedings of the 6th International Seminar on Quality Management in Higher Education, Book 1, pp. 303-306, 2010.
- [P+10] **S.F. Popescu, C. Stroe, E. Militaru, D. Radu** - *Assessment of the Quality of Educational Services in Higher Education through the Survey of Students' Perceptions*, Proceedings of the 6th International Seminar on Quality Management in Higher Education, Book 2, pp. 211-214, 2010.
- [Sko10] **M. M. Skok** - *Values of Teachers and Students and Quality of Higher Education*, Proceedings of the 6th International Seminar on Quality Management in Higher Education, Book 1, pp. 339-342, 2010.
- [SP09] **O. Saierli, L. Pater** - *Statistică. Aplicații economice*, Ed. Eubeea, Timișoara, 2009, ISBN: 978-973-673-168-6.
- [TKS08] **C. Țuican, T. M. Karnyanszky, B. Șelariu** - *Expert System for Quality Assessment in „Tibiscus” University*, Anale. Seria Informatica, vol. VI, pp. 239-248, 2008.