

Original Article

Comparative Approach Regarding Several Performance Criteria in Higher Agronomic Education

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Abstract

The importance of education for the development of excellence and knowledge directly contributes to social and economic development of a country, its economic and social prosperity. Ensuring development in this direction involves understanding the mechanisms underlying the process of strengthening academic quality assurance and improvement, but also the existence of a good strategy to achieve performance objectives in this area. Alike the businesses environment, universities want to consider strengthening customer-oriented approach in interacting with students. Berlin Communiqué (2003), emphasized that higher education institutions should promote adequate learning conditions for students to successfully complete the studies within a suitable period of time without obstacles related to socio-economic context. The key to improving education in the coming years largely depends not only on the sources of funding and investment in education, but also on the existence of effective and coherent policies based on evidence, with a better prioritization of educational goals in order to develop skills and basic skills and transversal to all children, young and adults in lifelong learning perspective with special focus on rural areas, disadvantaged communities and people with special educational needs. Comparative analysis of similarities, and differences between four universities providing agronomic education based on performance indicators can be inspiration for the road of improvement for each of them. In order to meet market requirements, each university must provide a guarantee of achieving the targets of excellence, ensuring the success only by introducing a quality management system, aimed at satisfying employability of graduates, as well as their needs. As a method of analysis, the University of Agricultural Sciences and Veterinary Medicine (USAMV) Cluj-Napoca will be the control, using all statistical methods by which we will highlight the status indicators, their dynamics and causal links between different variables analyzed. The extent of the education process and human resources was investigated in terms of some quantitative indicators acknowledged in studying the performances of higher agronomic education.

Keywords: agronomic education, performance criteria, students satisfaction.

1. Introduction

The importance of education for the development of excellence and knowledge directly contributes to social and economic development of

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a country, its economic and social prosperity. Ensuring development in this direction involves understanding the mechanisms underlying the process of strengthening academic quality assurance and improvement, but also the existence of a good strategy to achieve performance objectives in this area.

In terms of university autonomy, the quality problem is a problem of strategic management. The university establishes where it wants to go, how it wants to position itself in the national supply, and take the necessary measures to accomplish the vision. These measures, those relating to quality management are among the most important. Over time, depending on its institutional "maturity", the university will apply to the "loose" models, then models increasingly demanding to total quality management (TQM) [3].

Quality assurance is one of the main missions of higher education institutions. Defining quality in higher education can't be achieved without identifying the main issues defining quality in general. In everyday life, quality is understood as a naturally given concept, especially when given regularly [1].

In order for Romania to approach the Europe 2020 target (26.7%), one of the priorities of the period 2014 - 2020 is the inclusion of non-traditional students in higher education programs and providing support for graduation.

Each time, the elaboration of the strategic development plan must take into account the achievements of proximate or distant neighborhoods, especially should consider the profound changes of our times, marked by the global economic crisis and substantial decreases in budgetary allocations for the needs of society [1].

Operating in such a context, the university can focus its efforts on a realistic strategic vision to promote the university to a higher level of efficiency and quality in comparison to the current state, in order to educate and teach students, researchers and professionals in their becoming as specialists with a comprehensive vision on economic realities, cultural and social present and future.

A successful transition from the education system to the labor market or to tertiary education involves improvement of the learning experience and of school performance of pupils and students [2].

Universities must adapt their educational programs to the specific needs of these categories of students, and to develop appropriate training programs for teachers, to counterbalance the negative trend of enrollment in higher education after high school, a trend which fell sharply from 53.6% in 2007 - 2008 to 35.2% in 2011 - 2012.

Student mobility to or from Romania is still a challenge to create an attractive, quality tertiary education. During the period 2007 - 2010, the percentage of Romanian citizens enrolled in a college of another EU country rose from 4% in 2007 to 7% in 2010, remaining, however, insignificant compared to the reference threshold for 2020, stipulating that

"at least 20% of higher education graduates should have had a study or training period (including work placements in a professional environment) abroad in the forms of higher education, representing at least 15 ECTS (The European credit transfer and accumulation system) or for a duration of at least three months [5. 7].

In the academic year 2012/2013, in Romania, according to data published by the National Institute of Statistics, were enrolled in tertiary education, 620.529 students, of which 520.853 in state universities.

2. Material and Method

In Romania there are four universities providing agronomic education in Cluj-Napoca, București, Iași and Timișoara. For this research was used information provided by the four universities (CNFIS, data available according to reporting of public universities), regarding some performance criteria, namely "The number of papers published in journals with impact factor calculated at 100 permanent teachers in the university", "Cumulated relative influence score to 100 professors", "The number of patents, products, technologies or services developed at 100 positions, permanent staff", "Revenue from the provision of services and supply of products expressed in RON, made at one position, permanent staff" [6].

The statistical analysis was conducted using SPSS statistical processing program version 20. To analyze and compare the indices registered by the 4 Universities of Agricultural Sciences and Veterinary Medicine in Romania, ANOVA method was used to test the equality of two or more means, meaning it tests the null hypothesis that all groups means are equal. A statistical ANOVA test provides a F statistic similar to t statistic (for comparison of two means) by the fact that it compares the value of the systematic variance with the one of unsystematic variance.

3. Results and Discussions

Some performance criteria, carried out in the four universities, synthetically prepared, are illustrated below.

Criterion 1, "The number of papers published in journals with impact factor calculated at 100 permanent teachers in the university" is one of the most important targets, proving standard of excellence achieved by higher education institutions. The benchmarking of the 4 universities, according to this criterion is presented in Fig. 1 and the descriptive analysis of the criterion is exhibited in Table 1.

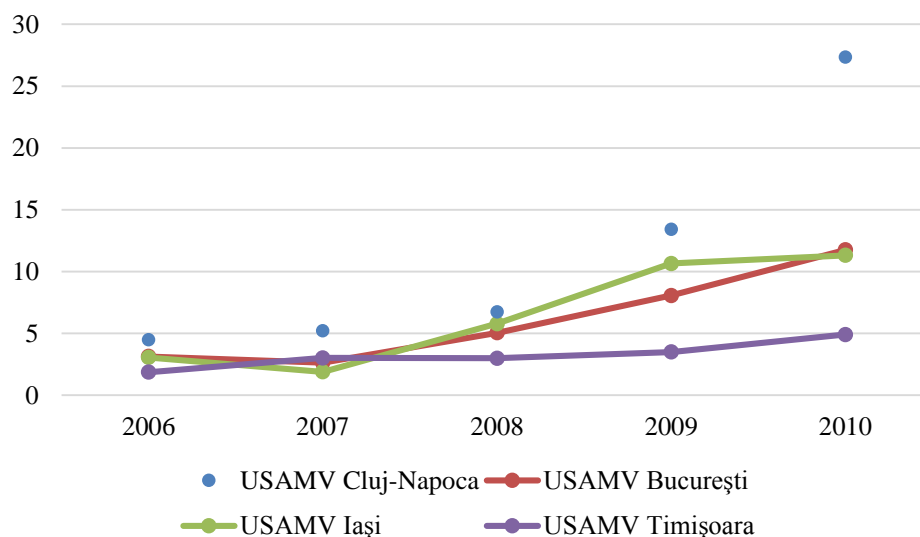


Figure1. Number of Papers Published in Journals with Impact Factor Holder Calculated at 100 Permanent Teachers in the University

Table 1.Descriptive Analysis of Statistic "Number of Papers Published in Journals with Impact Factor Holder Calculated at 100 Permanent Teachers in the University"

Issue	N	Mean	Standard deviation	Standard error	95% Mean confidence interval		Min.	Max.	Hierarchy
					Lower limit	Upper limit			
Timișoara	5	3.254	1.104	1.493	1.883	4.624	1.86	4.91	4
Iași	5	6.536	4.301	1.923	1.194	11.877	1.89	11.31	2
București	5	6.126	3.802	1.700	1.404	10.847	2.63	11.76	3
Cluj-Napoca	5	11.446	9.562	4.276	-0.427	23.319	4.49	27.34	1
Total	20	6.840	5.964	1.333	4.049	9.631	1.86	27.34	

Criterion 2, the "Cumulated relative influence score to 100 professors" is a major component of quality management in higher education and therefore a basic criterion for assessing standards of

excellence. Indicatively, the situation of the four universities analyzed through this criterion, is presented in Fig. 2 and the descriptive analysis of the criterion is exhibited in Table 2.

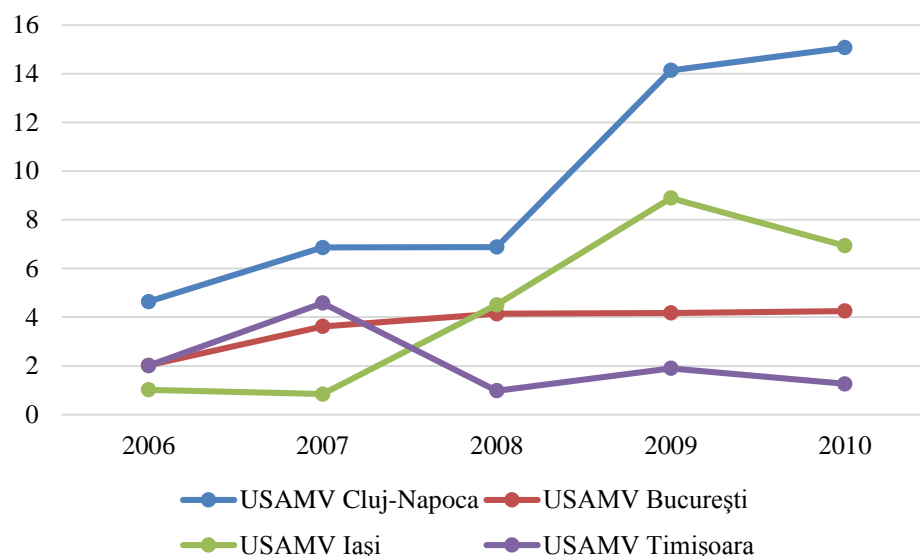


Figure 2. Cumulated Relative Influence Score for 100 professors in the University

Table 2. Descriptive Analysis of Statistic "Cumulated Relative Influence Score for 100 Professors in the University"

Issue	N	Mean	Standard deviation	Standard error	95% Mean confidence interval		Min.	Max.	Hierarchy
					Lower limit	Upper limit			
Timișoara	5	2.146	1.427	0.638	0.373	3.918	0.98	4.58	4
Iași	5	4.438	3.558	1.591	0.019	8.857	0.84	8.89	2
București	5	3.640	0.939	0.419	2.473	4.806	2.02	4.25	3
Cluj-Napoca	5	9.518	4.743	2.121	3.628	15.407	4.64	15.07	1
Total	20	4.935	4.012	0.897	3.057	6.813	0.84	15.07	

Criterion 3, "The number of patents, products, technologies or services developed at 100 positions, permanent staff", is an essential criterion of research undertaken as measured performances in improving

quality standards through innovation activity. The comparison between the four universities is convincingly illustrated by Fig. 3 and the descriptive analysis of the criterion is exhibited in Table 3.

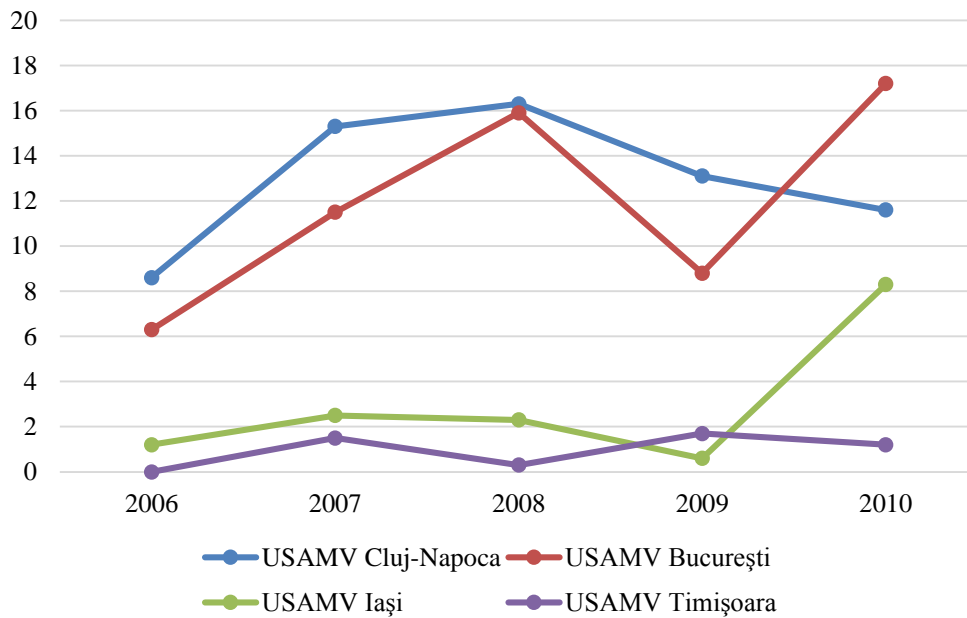


Figure 3. The Total Number of Patents, Products, Technologies or Services Developed at 100 Positions, Permanent Staff

Table 3. Descriptive Analysis of Statistic "The Total Number of Patents, Products, Technologies or Services Developed at 100 Positions, Permanent Staff"

Issue	N	Mean	Standard deviation	Standard error	95% Mean confidence interval		Min.	Max.	Hierarchy
					Limită infer./ Lower limit	Limită super./ Upper limit			
Timișoara	5	0.9400	0.75033	0.33556	0.0083	1.8717	0.00	1.70	4
Iași	5	2.9800	3.07522	1.37528	-0.8384	6.7984	0.60	8.30	3
București	5	11.9400	4.61552	2.06412	6.2091	17.6709	6.30	17.20	2
Cluj-Napoca	5	12.9800	3.06219	1.36945	9.1778	16.7822	8.60	16.30	1
Total	20	7.2100	6.18639	1.38332	4.3147	10.1053	0.00	17.20	

Criterion 4, "Revenue from the provision of services and supply of products expressed in RON, made at one position, permanent staff", is a very important indicator that measures the collaboration between the academic and

economic environment. Comparatively, the situation of the four universities, in terms of this criterion, is presented in Fig. 4 and the descriptive analysis of the criterion is exhibited in Table 4.

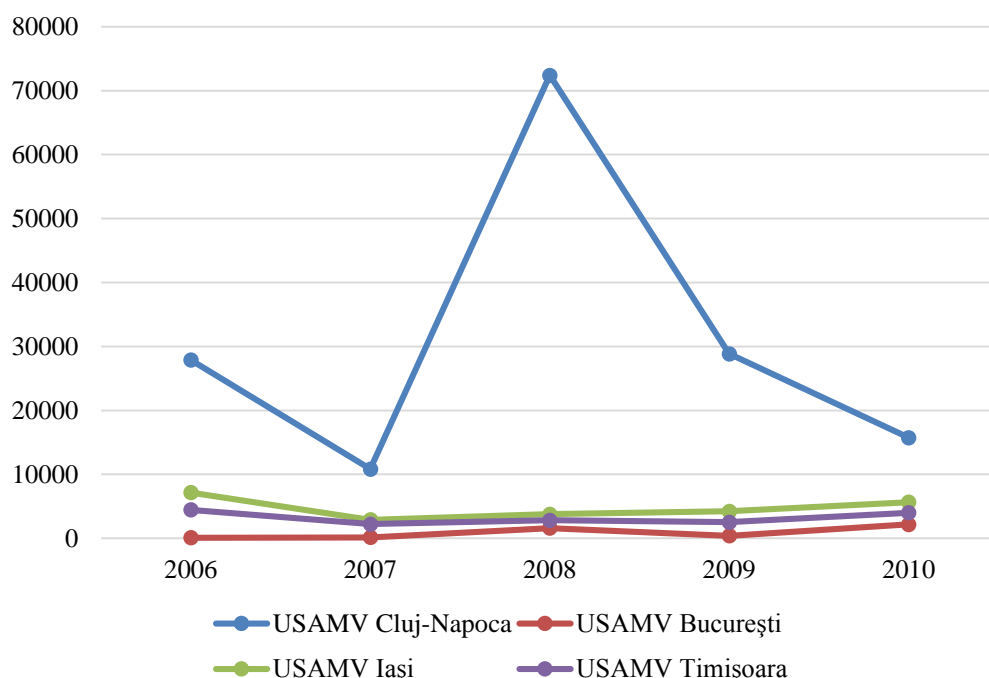


Figure 4. Revenue from Providing Services and Products Supplying Expressed in RON, Made at One Position, Permanent Staff

Table 4. Descriptive Analysis of Statistic "Revenue from Providing Services and Products Supplying Expressed in RON, Made at the Position, Holder Staff

Issue	N	Mean	Standard deviation	Standard error	95% Mean confidence interval		Min.	Max.	Hierarchy
					Lower limit	Upper limit			
Cluj-Napoca	5	31141.1	24327.5	10879.6	934.43	61347.7	10839.0	72395.2	1
Iași	5	4744.0	1674.9	749.0	2664.38	6823.7	2902.1	7153.5	2
Timișoara	5	3216.0	974.8	435.9	2005.63	4426.4	2224.9	4467.6	3
București	5	884.1	945.3	422.7	-289.67	2057.8	96.2	2178.9	4
Total	20	9996.3	16865.4	3771.2	2103.06	17889.5	96.2	72395.2	

4. Conclusions

A successful transition from the education system to the labor market or tertiary education implies the improvement of the educational experience and performances during all stages of youth schooling.

Education financing in Romania is particularly precarious. On the timeframe 2007-2013, the share of GDP allocated to higher education is decreasing, from 0.41% in 200, to 0.29% in 2013. The average allocation per student at the end of 2013, it was 1.222

Euro, compared with 10.600 Euro in OECD countries.

USAMV Cluj-Napoca AND USAMV Iași can be considered the best universities in the agronomic domain, being placed at the same level with an advantage for USAMV Cluj-Napoca, but statistically undifferentiated;

USAMV București is on the third position and USAMV Timișoara on the fourth, in this hierarchy

The universities should be increasing revenues through own activities from contract research and

design and to optimizing material expenses budget allocations.

The agronomic universities should develop effective management of capital expenditures budget allocations and from own revenues, including repairs, rehabilitation and consolidation.

Setting targets and measuring progress using indicators of their accomplishment are strongly correlated characteristics, specific to strategic approaches. Strategic management approaches and strategic processes have become increasingly used in recent decades, both in the public and private sectors, once it became obvious the inefficiency of rigid planning.

References

- [1] Ilieș L., 2003, Total Quality Management, Ed. Dacia, Cluj-Napoca.
- [2] Merce E., C.C. Merce, C. Hakizimana, 2008, Existential Correlations. Scientific Bulletin of Veterinary Medicine; vol 65 (2), 225-229.
- [3] Poruțiu V. V., 2015, PhD Thesis, Studies and Researches on Promoting Quality Management in Agronomic Academic Environment, Cluj-Napoca.
- [4] ***, 2003, Berlin Communiqué.
- [5] ***, 2011, The Institute for European Studies: IES (IES).
- [6] *** CNFIS, data available according to reporting of public universities.
- [7] *** Eurostat (UOE), Indicators on education funding. Note: compared with GDP - per capita site, all levels of education combined, based on full-time equivalents.

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