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Article

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BEST PRACTICES IN ACADEMIC MANAGEMENT. STUDY PROGRAMS CLASSIFICATION MODEL

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Abstract
This article proposes and tests a set of performance indicators for the assessment of Bachelor and Master studies, from two perspectives: the study programs and the disciplines. The academic performance at the level of a study program shall be calculated based on success and efficiency rates, and at discipline level, on the basis of rates of efficiency, success and absenteeism. This research proposes a model of classification of the study programs within a Bachelor and Master cycle based on the education performance and efficiency. What recommends this model as a best practice model in academic management is the possibility of grouping a study program or a discipline in a particular category of efficiency

Keywords: educational performance, educational efficiency, educational performance, indicators, curricula classification.

JEL Classification: I250

Introduction

High educational performance is a main objective of universities that they are trying to continuously maximize, but the quantification and appreciation thereof if a mere challenge.

The classification of study programs in several categories in terms of their efficiency is of interest both for universities and for prospective students to get to know the real performance level, which reflects the percentage of accumulation of competences offered through curricula. The first classification of the study programs nationwide in Romania was conducted in 2011 (UEFISCDI, 2011), but it included criteria related almost exclusively to the teachers' research in universities without taking into account the assessment indicators of the education performance from students' and graduates' point of view. This paper proposes a set of performance indicators to classify the curricula and the related disciplines,

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complementing the classification module used so as to obtain a complete picture regarding the performance and efficiency of the curricula from several perspectives.

University education in Romania has evolved over time in different formulas (formats), educational performance being influenced by various factors, an important place being occupied by government economic and social policies.

The first important change in the Romanian university education system is marked by the adhesion to the Bologna process effective from year 2005, which entailed the issuance of Masters programs as a complement to Bachelor programs and the adhesion to the transferrable credit system (ECTS).

An important element affecting students' academic performance is the economic crisis begun in 2008, financially affecting universities in terms of tuition revenue shortfalls, because of the students who could no longer afford to pay university fees. Many potential students drop out of university, having negative influences on the performance indicators used in the assessment of the study programs.

The primary data sources used in this paper are drawn from the integrated information system for the academic management of the Academy of Economic Studies in Bucharest. The data used regard students who graduated in 2011-2012, 2012-2013, 2013-2014 and 2014-2015 for Bachelor's study cycle and 2010-2011, 2011-2012, 2012-2013, 2013-2014 and 2014-2015 for Master studies cycle.

1. Literature review

Educational performance is widely debated upon in its specialized. Thus, Caro et al. (2014), Huang and Fang (2013), Zuviria et al. (2012) have defined the educational performance indicators at the individual level or for one academic year (Ting, 2001), while Farooq et al. (2011), Maris and Jacobs (1995), and Rodríguez (2005) have identified and analyzed the determinants of students' academic performance.

Caro et al. (2014) analyze the educational performance of the study programs based on indicators of graduation of a study program: graduation rate and efficiency rate. The performance of the disciplines is analyzed on the basis of performance indicators: the efficiency rate of the discipline, the success rate of the discipline and the rate of absenteeism of the discipline.

The study program graduation rate is the percentage of students who have graduated during the planned period or who have requested an additional year to restore the ECTS credits.

$$RA_y = \frac{A_y}{I_{y-n}} \times 100, \quad (1)$$

where:

A_y is the number of graduates in y academic yea ,

I_y is the number of subscribed in y academic yea ,

n is the duration of the studies in years.

y is the start-up year of an academic year.

Graduate means a student who has completed the final year of the study program.

The efficiency rate of the study program measures the percentage of the number of credits in the curricula versus the number of credits effectively obtained by the students.

$$RE_y = \frac{NrC \times A_y}{\sum_{t=1}^{m} \sum_{S \in A_y} C_{S,t}} \times 100, \quad (2)$$

where:

NrC is the number of credits that are necessary for graduation (for example 180 for the Bachelor cycle and 120 for the Master cycle)

y is the start-up year of an academic year.

A_y is the number of graduates in y academic year,,

$C_{s,t}$ is the number of credits obtained by student S during semester t

m is the duration of study in semesters

The discipline efficiency rate measures the percentage of the number of students who passed the discipline versus the number of students who were enrolled in this discipline.

$$RED_{d,t} = \frac{P_{d,t}}{I_{d,t}} \times 100, \quad (3)$$

where:
d means the discipline

t means the semester

$P_{d,t}$ is the number of graduates for discipline d within semester t,

$I_{d,t}$ is the number of the subscribed for discipline d within semester t.

The discipline success rate measures the percentage of number of students who passed the discipline versus the number of students who were present for assessment, the absent being excluded.

$$RSD_{d,t} = \frac{P_{d,t}}{Pr_{d,t}} \times 100, \quad (4)$$

where:

d is the discipline,

t is the semester

$P_{d,t}$ is the number of graduates for discipline d within semester t,

Pr_{dt} is the number of participants in the examination for discipline d within semester t,

The absenteeism rate of a discipline measures the percentage of the number of students who have not participated in the assessment versus the number of students who were supposed to take part therein.

$$RSD_{d,t} = \frac{I_{d,t} - Pr_{d,t}}{I_{d,t}} \times 100, \quad (5)$$

where:
d is the discipline,

t is the semester

$I_{d,t}$ *is the number of subscribed for discipline d within semester t,*

Pr_{dt} *is the number of participants in the examination for discipline d within semester t,*

2. Research Methodology

The research is based on analysis cantiatativa academic performance in terms of performance indicators.

From the methodological point of view, the research started with analyzing the theoretical framework provided by the specialized literature, continued with the definition of the specialized indicators followed by data collection, data processing and output analysis.

Data collection involved the extraction and processing of information from the integrated system for academic management of the Academy of Economic Studies of Bucharest, so that it may be harmonized with the purpose undertaken in this paper.

The data were processed by SPSS Statistics 22 application using the following methods and techniques: the grouping method, the method of correlation, the regression methods and graphics.

On the basis of the specialized literature, there were identified two levels of achieving the educational performance analyses: at the study program level and at the discipline level. At the level of study program, there will be made a classification of the study programs according to their performance as measured by efficiency and graduation rates, and at the level of discipline there will be made a classification of subjects according to the efficiency rate and according to the success rate of the discipline.

3. Data analysis

The analysis of the graduation indicators shows that the efficiency rates are high, around the average value 72,78% (Figure no. 1) out of the 100% as possible. This highlights mainly that the students graduated mainly from the subjects that had a higher number of credits.

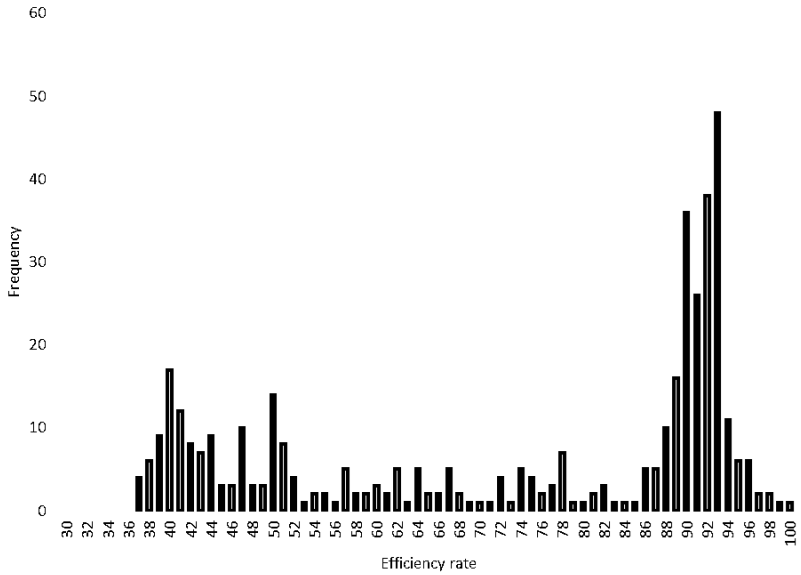

Figure no. 1: Efficiency rates histogram

The values of the graduation rates are lower, unlike the efficiency rates values, their average value being 79.83%. (Figure no. 2)

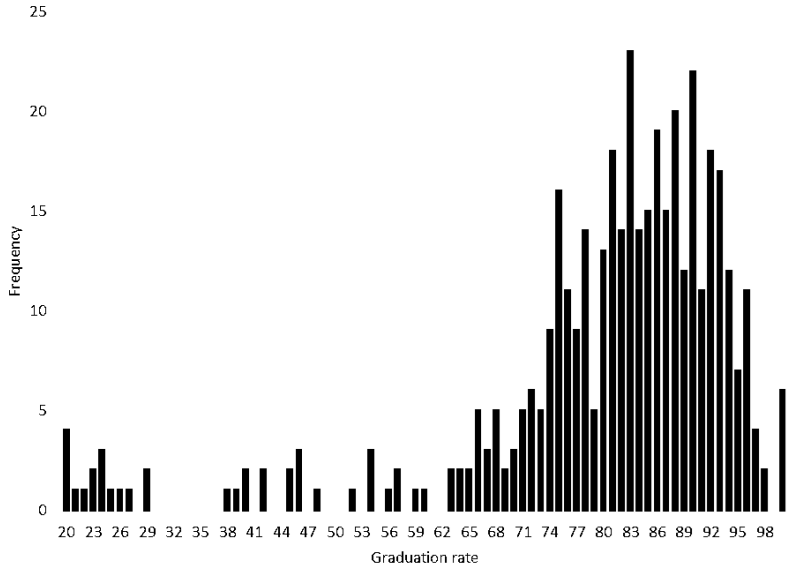

Figure no. 2: Graduation rate histogram

Analyzing the average values on the two cycles of university studies considered, there is a significant difference between the Bachelor and Masters programs. Thus, if for Bachelor

study programs the average value of the rate is 79,18%, the value of the efficiency rate and of the graduation rate is 59,25%, for the Master study programs the values increase significantly and the efficiency rate was 68,42% while the graduation rate was 84,83%.

Analyzing the average rate of efficiency by type of study programs and academic years one may notice an increasing trend for the Bachelor cycles and for the Master cycle, while it is constant for all academic years. (Figures no. 3 and 4)

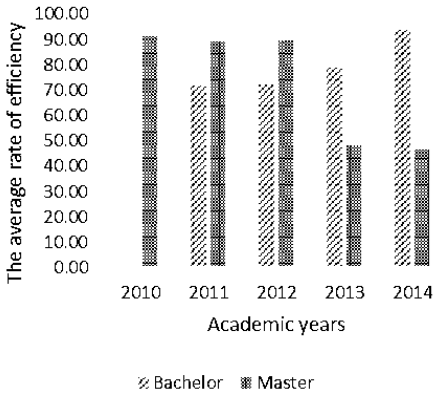

Figure no. 3: The average rate of efficiency on types of programs and academic years.

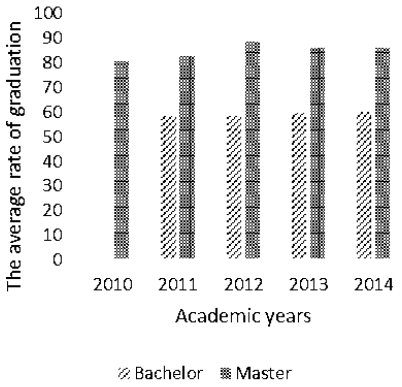

Figure no. 2: The average rate of graduation on types of programs and academic years.

The diagram of correlation for the graduation rate and the efficacy rate on categories of study cycles reveals that for the Master study cycles, the values of both rates are high. Based on the correlation diagram, the classification of the study programs on groups of efficiency is conducted. Thus, the programs for which the rate of efficiency is lower than 75%, and the graduation rate is lower than 50%, fall into the first quadrant and are ineffective. A study program in this category shall raise issues and the curricula and the assessment methods shall be reviewed.

The second category corresponds to the second quadrant, groups study programs with high graduation rate (many students who complete the program) but with the ECTS the cumulative number of graduates is quite small, hence a low efficiency rate. An explanation is the existence of subjects with a large number of ECTS credits that requires high time effort raising issues for studying and graduating therefrom. As shown in figure no. 5, few study programs fall into this category, most of them from the Bachelor study program.

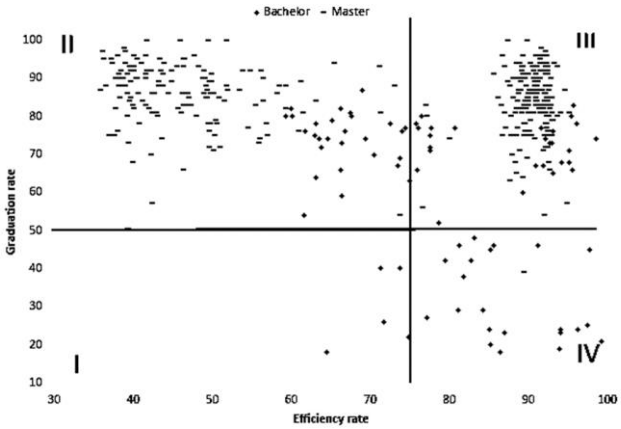

Figure no. 5: Classification of programs according to the rates of efficiency and graduation

The third category corresponds to the study programs for which both the efficiency rate and the graduation rate have high values. This category corresponds to the most effective programs of study in terms of educational performance. As shown in Figure no. 5, this category includes mainly Master study programs and a large part of the Bachelor study programs.

Figure no. 6 shows the classification into groups of performance of the study programs on academic years. Thus, it is found that all the programs graduated from, in 2010-2011 and 2012-2013 fall into the 3rd or 4th category being considered advanced or very advanced programs. For 2011-2012 there may be identified certain study programs falling in the 2nd group of less performing programs and for 2013-2014 and 2014-2015 most programs fall into the second group.

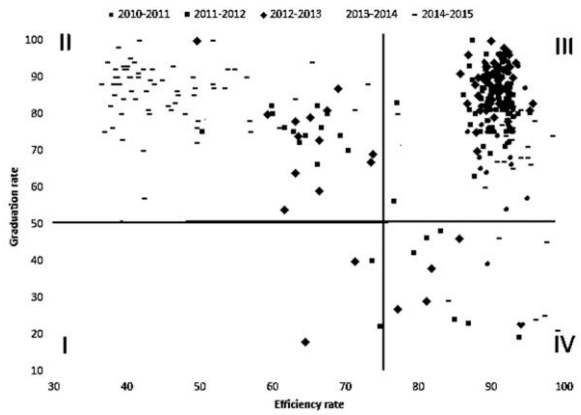

Figure no. 6: Classification of programs according to the rates of efficiency and graduation on graduation university years.

The analysis of the performance of the study programs of forms of education (figure no. 7) indicates that most of the full time study programs fall in to the 3rd quadrant (educationally very advanced programs) while remote education study programs fall mainly in the 4th quadrant (educationally advanced programs but with a small number or graduates).

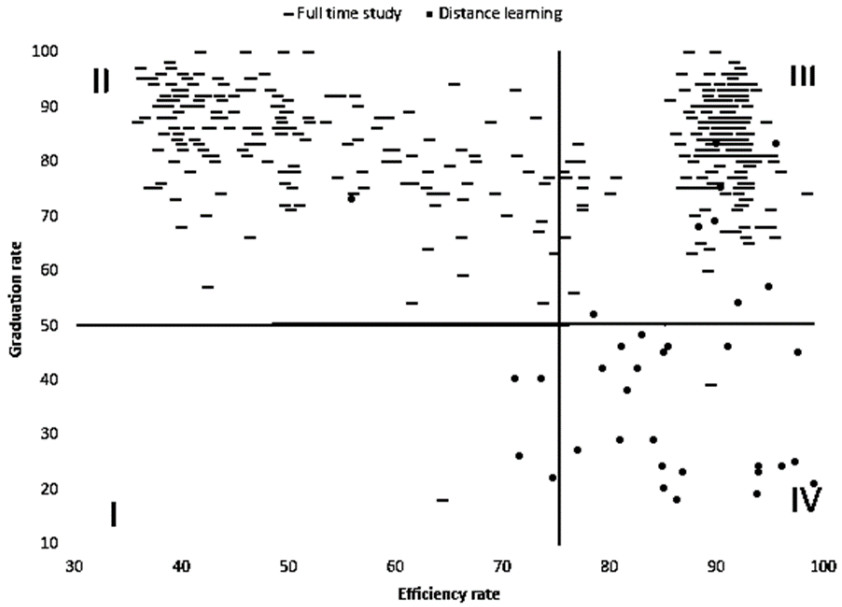

Figure no. 7: Classification of programs according to the rates of efficiency and graduation on the form of education.

4. Analysis of educational performance of disciplines

The analysis of the efficiency indicator of the discipline reveals that the efficiency rates are high for most disciplines, being around the average value of 92.27% (figure no. 8). This suggests that for a large number of subjects, the number of graduated students versus the number of subscribed students is high.

The values of the success rate are higher unlike the values of the efficiency rates, the average value is 98,01% (Figure no. 9). This shows that for a large number of subjects, the number of graduated students versus the number of students participating in the assessment is high, being low the number of students enrolled and subsequently abandoning the exams.

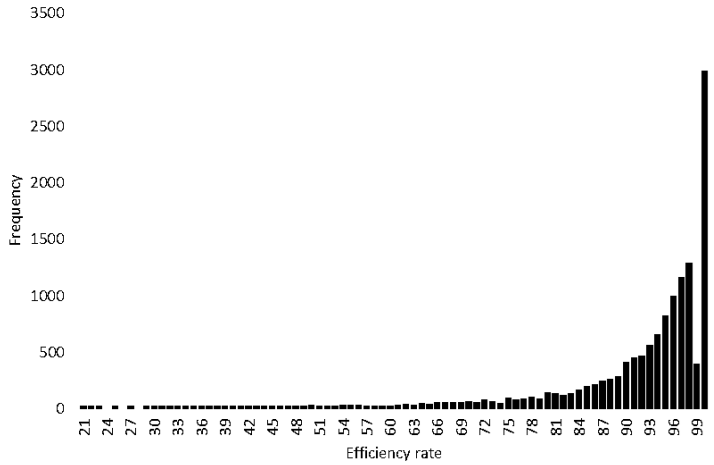

Figure no. 3: Histogram of the efficiency rate of the discipline

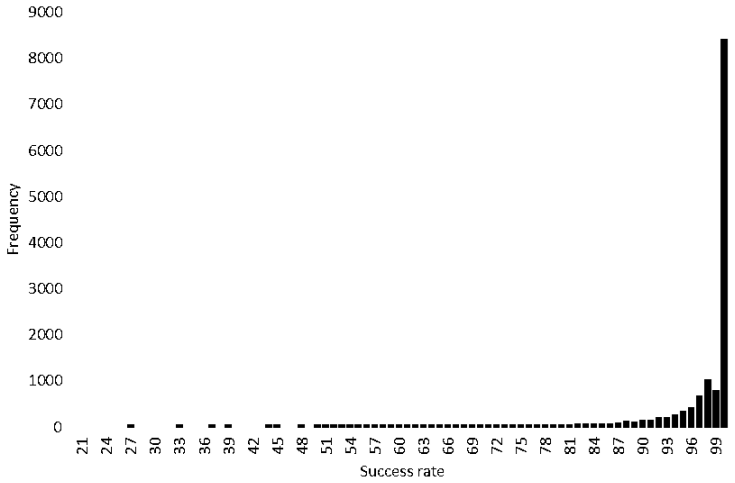

Figure no. 9: Histogram of the success rate of the discipline

The rate of absenteeism is low, the average value is 5,46%, which means that students are concerned about participation in organized learning activities and the final evaluations. (Figure no. 10)

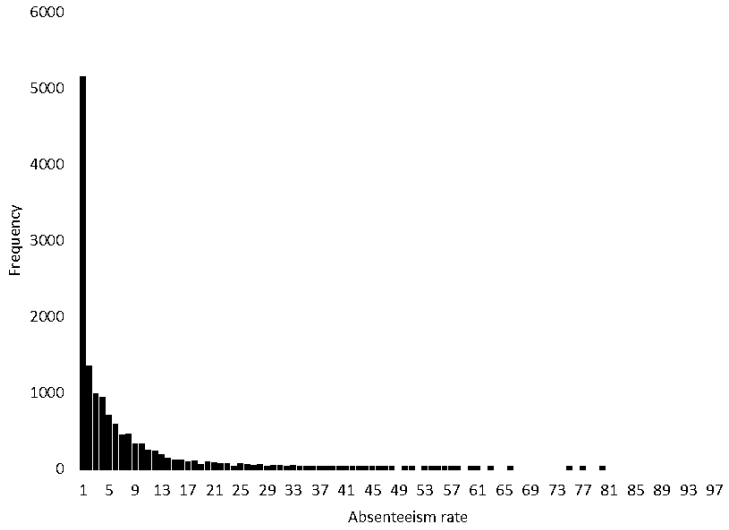

Figure no. 10: Histogram of the absenteeism rate of the discipline

The diagram of correlation between the rate of efficiency and the success rate on categories of subjects (figure no. 11) shows that for the optional packets of disciplines (A) and compulsory (O), the value of these rates is high.

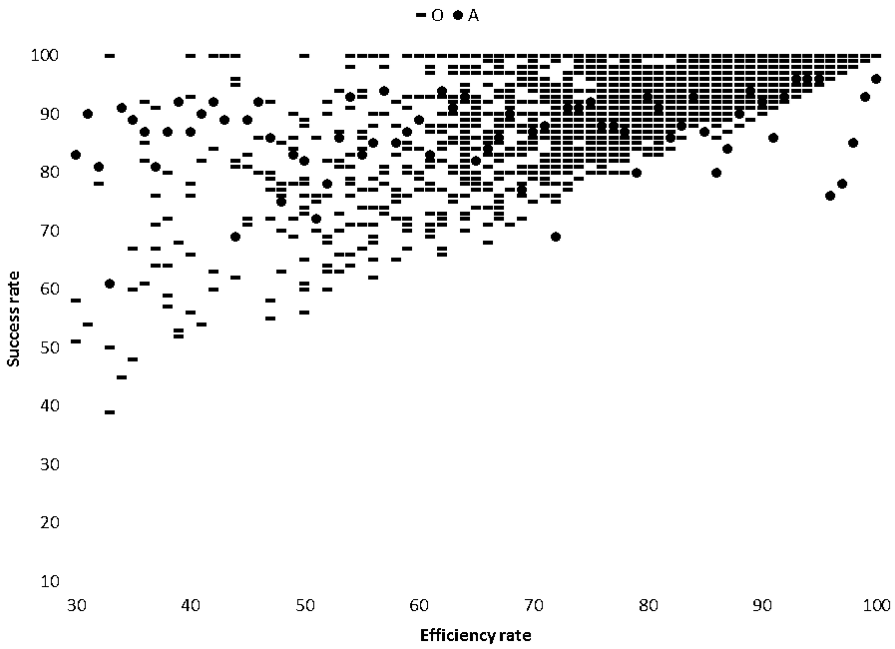

Figure no. 11: Diagram of correlation between the success rate of the discipline and the efficiency rate of the discipline

Conclusions

This paper proposes a set of indicators to measure the students' educational performance within the programs of study and of the related disciplines in a university. The testing of the indicators was developed for the study programs and the disciplines therein at the Academy of Economic Studies of Bucharest. The set of data used the entire statistical population identified by the graduates of 2010-2011, 2011-2012, 2012-2013, 2013-2014, 2014-2015 (Master cycle) and 2011-2012, 2012-2013, 2013-2014, 2014-2015 (the Bachelor cycle) promotions, taking into consideration overall the results of 19724 Master graduates and 15410 Bachelor graduates. Using the entire statistics population to test the proposed performance indicators provides accuracy and value to the tested indicators especially in terms of economic education in Romania, all study programs considered being in the field of economic sciences.

This paper proposes a model of classification of the study programs into four categories corresponding to the level of performance and efficiency thereof:

- The first category which lists all the study programs deemed ineffective
- The second category includes underperforming study programs
- The third category includes high performance educational programs
- The fourth category includes educationally performing programs but with a small number of graduates

The outputs provide a perspective on the classification of the study programs in terms of students' educational performance, which, along with other criteria for the classification of the study programs (e.g. the outputs of the research), provide a complete picture of the overall performance of the study programs.

The data analysis revealed a large amount for the efficiency and graduation rates within the study programs with presence on campus (full time study) and lower values of the graduation rate for the programs without a presence on campus (distance education). High values for the two rates of graduation and efficiency were recorded mostly for the masters programs.

The proposed set of indicators and the model of classification of the study programs based on the quantitative statistical analysis provide strong support for the academic management in a university.

A limitation of the research is the heterogeneity of the study programs and of the subjects studied therein, heterogeneity occurring in any university.

Further research will focus on identifying the factors of influence of educational performance and on the analysis of the evolution of the number of students within the study formations.

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