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A CONCEPTUAL MODEL TO IMPROVE FINANCING CAPACITY OF UNIVERSITIES - THE CASE OF ROMANIA

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***Abstract:** The financing of higher education in Romania is correlated with specific quality standards through some indicators which are based on a standard financing scheme. The institutional financing includes fundamental financing (FF), additional financing (AF) and accumulation (A) for institutional development. Each type of financing is based on its own calculation algorithm. This paper achieves a critical analysis of quality indicators integrated in the calculus algorithm of AF, standardized for higher education in Romania, to conclude by proposing a conceptual model of improving them so that universities are able to increase the funds attracted from the state budget by AF as much as possible.*

***Key words:** higher education, performance-based financing, quality indicators, international standards*

1. INTRODUCTION

Education empowers individuals to become actively engaged in integration and improvement initiatives for society. The role of education in developing countries remains important especially when this can improve the economic outcomes of citizens and determine new prospects for future generations. The variety of educational institutions in cities with university centers and renowned companies offer young population a guaranteed entry into the labor market. Such benefits provided by educational institutions there are found in a majority segment, in the urban area, which attracts a high rate of students' accessibility to the learning process. The educational institutions must reshape their learning strategies and acknowledge what competencies are needed in the labor market to correspond with the future generation of workers. Universities must develop an active knowledge society and provide enrollment possibilities for individuals in an educational cycle to generate buy-in and allow their knowledge transferred in practice.

In a society in continuous change, in which globalization represents an important factor,

communication, mobility and competitiveness are important characteristics, the role of universities becoming a complex one. Universities must satisfy multiple needs, from those regarding knowledge, to those regarding the training and the inclusion of individuals, flexible and dynamic labor market. A long time, academic research, and governance transformation initiatives implemented have led to redesign faculties, much more centered on student skills, offering unique academic programs. For example, Romania's universities, namely engineering schools are highly respected and well-known in the education and academic communities, and they continue to offer prestigious Bachelor's, Master's, and Ph.D. programs contributing to the country's economy and intellectual wellbeing.

The tertiary education system has to respond not only to the students' needs, but also to social ones, to companies' demands, being necessary that the higher education system be a competitive and valuable one that responds to the job market and to the need of techno-scientific development. To this point, administering the financial resources of a university, from public policies and management plans, the sources of financing and

the capacity of universities to attract and administer them, to the budget distributions and the qualitative and quantitative results obtained, represent a complex and necessary analysis [1].

Globalization imposes adapting the education system and the quality standards so that they correspond to present demands, to technological development and to innovative leadership [2]. The phenomenon has direct effects on national and local policies as the education systems adapt to the new demands that are characterized by flexibility, diversity, increased competitiveness [3].

This paper achieves a critical analysis of the criteria that lay at the basis of additional financing (AF) of higher education institutions in Romania, being based on the national and local legislation, public data from appointed institutions and specialty studies approaching the subject of financing on a national and local level.

This research includes five parts. The first part of the research provides an overview of the research background, logical guide, importance, problems, motivation, goal, and limitations. The second and third part of the research describe the situation of the Romanian higher education from the point of view of financing sources correlated with the quality indicators identified on a national level. We have in view the role of the Romanian education in the European context taking into consideration the similarities and the differences between financing systems starting from the premise that the Romanian higher education is an integrating part of a tertiary education system on a European level.

In the fourth part we achieve a critical analysis of *quality indicators integrated in the AF calculus algorithm (internationalizing class) we propose a conceptual model for improvement*.

The topics for analysis that we approach are:

- The distribution methods of public and private financing to higher education institutions;
- Identifying the advantages and the disadvantages of fund allocation systems;
- Identifying good practice models on an international level with applicability in the

financing system of Romanian higher education.

The last part of this research presents the conclusion contributions, the shortcoming of paper, and shows some future gaps for the next research.

2. THE ROMANIAN HIGHER EDUCATION SYSTEM IN THE EUROPEAN CONTEXT (THE FINANCING SOURCES)

According to a report published by the European Commission regarding education systems, in the year 2019 it was concluded that public budget distributions may be analyzed using different indicators, depending on the purpose of the analysis [4]. Considering the percentage of the Gross Domestic Product (GDP) generates a direct link between education and the economic capacity of every country. Another is identifying the percentage allocated to supporting education in proportion to the total of public expenses on domains represents the importance given to education in proportion to other distributed expenses. At least, the expenses allocated per student may lead to establishing the number of students enrolled in a university year.

On the level of the European Union member states, one has observed several consistent rules regarding the allocation of public funds [5]:

- Funds are allocated as grants in contracts between the university and the appointed ministry;
- Establishing the sum of financial allocations has as generic criteria: direct negotiations, a statistic analysis of the evolution of the university, calculus formulas based on quality indicators;
- In some systems grants are allocated depending on contests, in others they are attributed for determined objectives, but there are also cases when the two methods are combined.

Where Romania is concerned, the legislation applicable to higher education has been in permanent change. Although the changes were generated by the structural modifications in the Romanian economy and society, through the

need to align the Romanian education to the Bologna system and the national legislation to European standards, the legislative modifications generated instability and the impossibility for universities to apply a coherent and efficient management policy with long term predictability.

According to Law no. 1/2011 – the law of national education, the financing of universities from the funds allocated by the appointed ministry is structured in three components: fundamental financing (FF), additional financing (AF) and financing for institutional development, accumulation (A). The criteria are stated under art. 222 in Law no. 1/2011. They can be considered as long-term objectives starting from a generally accepted situation, namely that education is a national priority:

- a. Ensuring the quality of higher education on the level of standards from the European environment for higher education for training human resources and the personal development as citizens of a democratic society based on knowledge;
- b. Professionalizing human resources in accordance with the diversification of the labor market;
- c. Developing higher education, scientific research and university artistic creation to integrate them in the leading scientific world.

3. THE CRITERIA LYING AT THE BASIS OF HIGHER EDUCATION FINANCING IN ROMANIA CORRELATED TO EUROPEAN DEMANDS

3.1 Correlating quality indicators in Romanian higher education for additional financing to development strategies on the European level

Most of the European Union member states have implemented financing systems that have performance indicators at their basis. The reasons at the foundation of introducing indicators are correlated to the main objectives of public policies: increasing efficiency and the overall performance of the education system, developing the awareness of universities regarding their expenses with the public

financing in the research-development field [6], increasing quality regarding the achievement of the tasks appointed to their missions, internationalizing activities [7].

The differences between the financing systems of state universities in Europe are generated by the types of financed activities, the percentage of financing based on performance, the performance indicators used, and the percentages attached to the indicators in the models. Higher education systems are financed depending, on one hand, on the number of university accredited programs and the number of students enrolled in the studying programs and on the other hand on the capacity of universities to attract financing sources that are different from the public ones [8].

Financing models often use the following performance indicators:

- The number of graduates/Bachelor and Master degrees (Austria, Finland, Holland);
- The number of exams or credits earned by the students (Austria, Denmark, Finland);
- The number of those who graduate Ph.D. studies (Denmark, Finland, Holland);
- Research efficiency (Denmark, Finland, England, Scotland);
- International direction (Finland, Romania);
- The quality of the higher education process starting from surveys done on students/the inclusion of graduates on the labor market (Finland).

One of the constant indicators for financing is the number of students enrolled. This situation is included in the recommendation issued in the Education and Training Monitor 2019 report [4], namely that member states have to take into consideration the demographic changes foreseen until 2040 where the appointing and the balance of the used financing indicators are concerned. It is estimated that in the following years there will be an increase in the expenses per student, yet, paradoxically, the total of expenses allocated to education will not increase.

In Romania, the sums allocated to FF and AF provided by the Ministry of Education and Research are stated in the institutional contract by: the number of students financed by the state budget depending on the type of study cycle (license and master degree) and the number of

financed Ph.D. grants. Each of these indicators has analysis subgroups, every one of them with a percentage established depending on the existing statistic data for the previous university year.

Although an overall performance of the educational system is noted, the Ministry of Education has continued to provide quality education services to students in cooperation with its development partners. This commitment remains strong while also seeking to ensure access and equality towards the vision of education for all, equity in the realms of both gender and special needs, improving enrolment rates, accommodating all age groups, providing a stimulating educational environment and developing awareness and health programs. To lessen the challenges to infrastructure, the Ministry is working in parallel to reduce the number of rented and double-shift schools while also increasing the amount of land available for school buildings and developing a maintenance system for schools. Such efforts require intensive cooperation, commitment, and participation.

3.2 Adapting the national model to the international quality standards

The development strategies of the higher education system in the European Union were detailed in The Status of Higher Education Financing, the public report for the years 2017 and 2018 published by the National Council for Higher Education Financing. The priorities for action for the measures on the local level are:

1. Preventing the future lack of correlation regarding competences and promoting excellence in the development of competences;
2. Consolidating interconnected higher education systems favorable to social inclusion;
3. Ensuring the fact that higher education institutions contribute to innovation;
4. Supporting efficient and effective higher education systems.

These priorities determine the elaboration of some objectives for a common European space for education that includes: a consolidated Erasmus program; creating at least 20 European universities until 2024 (this should contribute to

issuing European degrees that are admitted in the entire Europe); creating a European student badge to facilitate mobility; a proposal for recommendation of the Council regarding the promotion of instant mutual recognition of higher education degrees and also of those for graduating secondary education, as well as of the results obtained during the years of study abroad.

The identification of some adequate performance indicators for evaluating the efficiency of higher education is well-known in the literature. The first debates were generated in the papers *The Use of Performance Indicators in Higher Education* [9], *Performance Indicators in Higher Education* [10] respectively. In the literature we identified [11] indicator typologies, which can be individualized depending on each educational system separately:

1. Indicators for entry rates in the educational system:

- The availability of financial resources (private and public investments depending on GDP);
- Human resources (the number and quality of students and professors).

2. Indicators for measuring the outcomes of the educational system:

- The proportion of the population that followed tertiary education measured by graduation rates and the percentage of educated population;
- The chances of graduates to be employed;
- The attractivity of the systems, measured by the flow of foreign students.

4. THE CRITICAL ANALYSIS OF QUALITY INDICATORS FOR ADDITIONAL FINANCING AND PROPOSALS FOR IMPROVEMENT

4.1 The conceptual model proposed

The proposals for improvement take into consideration the concepts used on a local level and the criteria at the basis of international classifications where universities are included. The performance indicators are included in five main categories (Figure 1), every one of them containing several subcategories depending on their relevance [12].

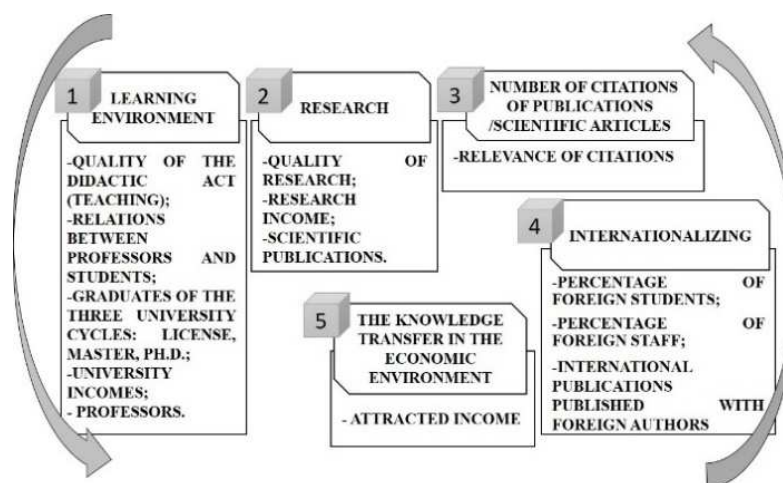


Fig. 1. Indicator categories and their subcategories

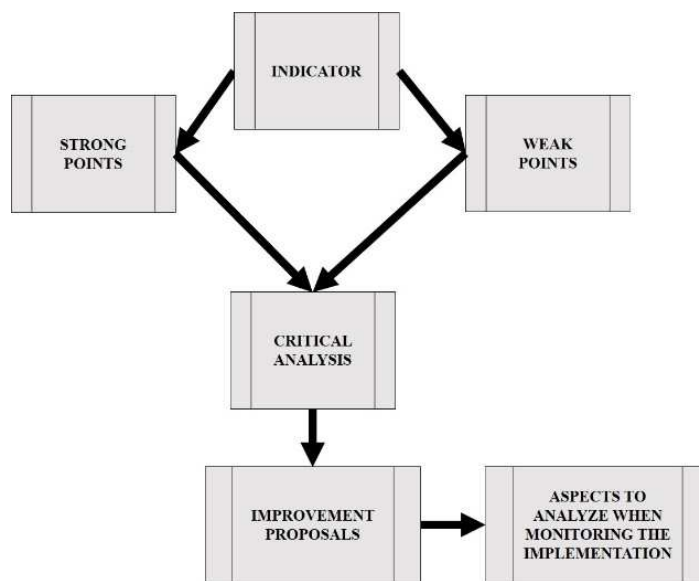


Fig. 2. The Analysis mechanism

In Romania there are four classes of indicators: teaching/learning, scientific research/artistic creation/sports performance, international direction, regional direction and social equity.

Starting from a model called “A conceptual grid for the indicators to be used in the classification” used in the study The European Classification of Higher Education Institutions [13], the critical analysis of indicators will have in view the present situation in implementing the indicator, the identification of strong points and weak points, an analysis which generates the proposals for improvement that in their turn can

be monitored depending on the characteristics and the situation of the indicator (Figure 2).

4.2 The viability of quality indicators

Starting from the concepts detailed in point 4.1, we proceeded to the critical analysis of indicators in class C3 - International direction, under implementation in the year 2020 (QI_3) and of the indicators proposed for guidance in the years 2017 and 2018 (QI_PG_3).

The data used are public studies, reports, methodologies, provided by the national institutions in the field – The National Council for Higher Education Financing, The Romanian Agency for Ensuring the Quality of Higher Education, The National Statistics Institute [14].

As criteria for the viability of the indicators we follow [15]: *the validity* – the capacity to provide measurable data; *the legitimacy* – the indicator is relevant in rapport to the desired purpose and its impact; *the usefulness* – collecting the necessary data for the indicator to be feasible.

The percentage of student mobilities (Table 1) is an output type, centered on quantitative results. Determines the capacity of universities to ensure mobilities, by contrast to the total number of the students on a period (4 years).

The percentage of foreign students enrolled in studying programs (Table 2) is an output type, centered on quantitative results. Determines the degree of attractivity of the university for the students with different citizenship on a period (4 years).

The lack of criteria to determine the capacity of the university to support the students along an entire university cycle; The impossibility to identify on a qualitative level the demands on the labor market; Difficulties graduates encounter regarding degrees.

The analysis of quality indicators (QI_3) used for criteria (C3. International direction) for additional financing attributed to the year 2020, reveals that they are only an output type and they may be improved with qualitative criteria.

In the following, are analyzed the quality indicators proposed for piloting in year 2017 and 2018: International (outgoing) professional mobilities of the professors and Ph.D. studies under international joint supervision. The indicators were not implemented in the additional funding of universities, because they require changes in the types of data collected and in the calculation formulas.

International (outgoing) professional mobilities of the professors is of outcome type, being centered on qualitative data by contrast to the number of professors employed in the system and their interest in international mobilities (the analysis of the indicator QI PG_3.1 proposed for guidance is presented in Table 3.

Ph.D. studies under international joint supervision is of output type indicator, centered on quantitative results. The indicator may determine the capacity of universities in Romania to collaborate at the level of Ph.D. institutions with Ph.D. schools abroad (the analysis of the indicator QI PG_3.2 proposed for guidance is presented in Table 4.

Table 1

QI_3.1 The percentage of student mobilities	
The strong points of the indicator:	
The mobilities happen within some international programs such as: Erasmus, Tempus; The target group are foreign students from EU member states but also non-EU; We have in view both incoming mobilities, but also outcoming; The implementation of the transferrable credits system for the recognition of mobilities.	
The weaknesses of the indicator:	
The allocated funds are sometimes insufficient for supporting the students; The lack of institutional agreements between universities.	
The weaknesses of the indicator have as effects:	
The limitation of the financing sources through specific projects that do not allow co-financing on the part of the host university; The lack of qualitative criteria that allow the measurement of usefulness.	

Table 2

QI_3.2 The percentage of foreign students enrolled in studying programs	
The strong points of the indicator:	
It has in view the license and master cycles; The target group are the students who have different citizenship; By the system of transferrable credits, the studies partially done in Romania can be recognized abroad.	
The weaknesses of the indicator:	
It has in view the number of enrolled students and not the number of those who graduated the cycle; There is no data about the employment of the students on a national or an international level.	
The weaknesses of the indicator have as effects:	

Table 3

QI PG_3.1 International (outgoing) professional mobilities of the professors	
The strong points of the indicator:	
Here are included the titular professors irrespective of their seniority; The mobilities happen within some international programs such as: Erasmus, Tempus.	
The weaknesses of the indicator:	
It does not have in view the incoming type mobilities; Mobilities can be of the conference, workshop, symposiums type, not of teaching and/or research; A professor can take part in more mobilities in a year; The mobility may be influenced by the geographic position of the university (a higher percentage may be noticed in universities that are close to the border).	
The weaknesses of the indicator have as effects:	
The indicator may generate data regarding the improvement of the teaching and the learning process	

in an international context, but it is insufficiently balanced and determined.
The way in which it is defined does not confer it usefulness and legitimacy.

Table 4

Q.I PG_3.2. Ph.D. studies under international joint supervision

The strong points of the indicator:
It has in view the number of Ph.D. thesis presented under joint supervision and this is not compared to the number of Ph.D. students enrolled under joint supervision.
The weaknesses of the indicator:
It only refers to a cycle of studies – the Ph.D., exclusive of license and master cycles; The number of Ph.D. students is smaller in comparison to license or master students; Based on the reports since the year 2017 and 2018 we observe that a few universities (16) had Ph.D. studies under international joint supervision, which makes the indicator eliminatory and restrictive; The programs under joint supervision can also be the result of individual collaborations between the Ph.D. student and the institution abroad; It only measures the Ph.D. students enrolled at universities in Romania, not also the ones enrolled at universities abroad The indicator lacks the criterion of legitimacy and usefulness.
The weaknesses of the indicator have as effects
<ul style="list-style-type: none"> •The integration in the system of individual collaborations; •The access of Romanian universities to the international market; •Adapting the assessment system to the indicators used in international classification.

4.3 The proposal for an improvement model of the quality indicators

Regarding QI_3.1. *The percentage of student mobilities*: we may analyze, have in view respectively, monitoring the results of implementing the following aspects:

The indicator may include two types of subindicators: one that is centered on quantitative results and the second that is centered on qualitative results.

The suppliers of statistic data may be the universities (in Romania or from abroad, to facilitate a crossed check), the National Statistics Institute, the National Agency for Quality Assurance, the Ministry of National Education and Research.

The students can be actively involved by filling in assessment questionnaires.

A proposal for improvement for indicator QI_3.1. is in Table 5.

Table 5

Proposal for improvement for the quality indicator QI_3.1. The percentage of student mobilities

Proposal for improvement:
<ol style="list-style-type: none"> 1. The capacity of universities to ensure the co-financing of the students by: <ul style="list-style-type: none"> - Organizing mobilities in the joint supervision system; - Closing cooperation agreements between universities and economic firms directly interested. 2. Identifying the usefulness of student mobilities by: <ul style="list-style-type: none"> - Increasing the students' knowledge level; - The mutual recognition of studies on an international level.

Table 6

Proposal for improvement for the quality indicator QI_3.2. The percentage of foreign students enrolled in studying programs

Proposal for improvement:
<p>Since the indicator's purpose is determining the degree of attractivity of the university to foreign students, it can be improved by including the following data categories that can be subjected to processing:</p> <ol style="list-style-type: none"> 1. The percentage of the graduates that were employed in the field in Romania, in their country of origin or in a third state; 2. The capacity of the university to attract and support foreign students during a cycle of studies. 3. International agreements whose purpose is standardizing degrees and credits on a European level.

Regarding QI_3.2. *The percentage of foreign students enrolled in studying programs*: we may analyze, have in view respectively, monitoring the results of implementing the described in Table 6. The indicator may provide qualitative data having the option for this to become an outcome type of indicator.

In Table 6 is proposal for improvement. For the proposed data categories, it is necessary to follow:

1. The existence in universities of some data bases that allow keeping in touch with the students after graduation;
2. The entrance systems, the infrastructure of the university (hostels, libraries, facilities for foreign students, grants and so on);

3. The degree of recognition of the diplomas abroad.

Table 7

**Proposal for improvement for the quality indicator
QI_PG 3.1. International (outgoing) professional
mobilities of the professors**

Proposal for improvement:
<p>Although the indicator has not been implemented, it has the capacity to become relevant and viable with the following improvements:</p> <ol style="list-style-type: none"> 1. The percentage of the foreign professors invited to teach in universities; 2. The impact of mobilities on the quality of the teaching; 3. Facilitating the closing of institutional agreements. 4. The internal procedures correlated to international standards for instant recognition of the teaching.

Table 8

**Proposal for improvement for the quality indicator
QI_PG 3.2. Ph. D. studies under international joint
supervision**

Proposal for improvement:
<p>The indicator is not viable, and it has not been implemented. Yet, it can be adapted to the used indicators to form the international classification of universities, namely:</p> <ol style="list-style-type: none"> 1. Interinstitutional collaborations in the internationalizing system; 2. University associations with higher education institutions from abroad; 3. Branches of Romanian universities put in place abroad.

Regarding QI_PG 3.1. *International (outgoing) professional mobilities of the professors*: we may analyze, have in view respectively, monitoring the results of implementing the aspects described in Table 7.

The implementation of the indicator may be influenced by:

1. The legislative context: the teaching quota does not necessarily include the international mobilities of the professors;
2. The lack of a uniform practice regarding the measurement and the capitalization of the results of the mobilities;
3. The expansion of the outgoing type of financing for the associated/invited professors (Table 7).

Regarding QI_PG 3.2. *Ph. D. studies under international joint supervision* we may analyze, have in view respectively, monitoring the results of implementing the following aspects.

To avoid the indicator to become a restrictive one (as it is possible that the universities closer to the borders, as well as those in developed areas have an advantage), we can implement the following measures:

1. Supporting Ph.D. schools in the context of internationalizing and correlating national systems on a common standard within the European Community;
2. Including in the assessment the license and master cycle;
3. Setting up a platform that facilitates the e-learning system.

The proposed conceptual models suppose collecting and processing a big volume of information and data provided by different authorized sources, the purpose being to identify the best solution that must be implemented (Table 8).

4.4. Summary and discussions

The proposed conceptual models suppose collecting and processing a big volume of information and data provided by different authorized sources, the purpose being to identify the best solution that must be implemented. In special papers we have identified two models that can be developed and adapted for identifying optimal indicators that may be taken into consideration regarding the criterion of internationalizing. The first has as foundation the multidisciplinary cooperation referring to processing data and communication between universities (professors and students) and companies. By doing research together there is first, the possibility of learning from each other. Second, we have the chance to use the best resources that are available and in the same time do all this fast enough and in the resource - wise way. Being capable to help the other co-worker to accomplish their goals is beneficial for all. It is essential to succeed in benefiting multidisciplinary competence and sharing information. This model can be developed and applied in the context of international cooperation across borders [16]. The second model uses processing information in the scope of adopting the best decision for using the “fuzzy” logic. The method follows optimizing some processes that have multiple objectives by adapting parameters depending on the degree of

meeting demands. The mechanism has a very large possibility to find the comprehensive optimal solution expected to its multiple search way. The quality of each final solution is very high [17].

5. CONCLUSIONS

It has been observed that the field of internationalizing, with the main objective of correlating the Romanian education to European standards and implementing studying programs under international joint supervision represents a potentially increasing domain. The connection between the efficiency of allocating resources from the state budget and the results obtained by higher education institutions is present in almost all financing systems, an increase being observed to this respect.

The actions of identifying and implementing quality indicators grouped in interest classes may follow a mechanism of critical analysis starting from the initial situation, the effects of the indicators being divided into strong points and weaknesses, improvement proposals with a qualitative and quantitative estimation of effects.

The model of additional financing of universities will have in view the achieved results and the objectives set by the universities based on qualitative and quantitative criteria for measuring performance.

From the perspective of internationalizing, universities can improve their image not only to attract students and partnerships, but also to increase their capacity to attract funds from additional financing. International competition and standards represent an incentive for improving the quality of educational services on offer which attracts an even higher number of students and generates a favorable work environment for more performant staff.

Following the analysis, it is considered useful to combine qualitative and quantitative indicators. They can be adapted to the realities of Romanian higher education, considering and the data that can be obtained in an organized and structured way. On the other hand, for certain time intervals can be proposed for piloting new indicators, whose content has been identified.

Their role will be to provide not only their strong points or weaknesses, but also the results of indicator in implementation, by comparison.

Romanian universities have engaged in the transformation process to ensure that teaching and learning, research, and publishing will continue to brighten and strengthen academia's contribution to economic growth and prosperity. Universities must respect their commitment and dedication for a continuous and harmonious lifetime for learning and teaching. Their ceaseless curiosity for innovative educational methods, dedication to hard work, and desire to share knowledge paved the way for an impressive educational background and the best career opportunities for their students. More important creating new powerful knowledge through his students will stimulate new innovative products, create growth, and accelerate the economic development of the nation.

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Un model conceptual de îmbunătățire a capacității de finanțare a universităților – cazul României

Rezumat: Finanțarea învățământului superior din România este corelată cu standarde specifice de calitate, prin intermediul unor indicatori, care au la bază câte o schemă standard de finanțare. Finanțarea totală include o finanțare fundamentală (FF), o finanțare adițională (FA) și acumulare (A) pentru dezvoltarea instituțională. Fiecare tip de finanțare se bazează pe câte un algoritm propriu de calcul. Lucrarea de față realizează o analiză critică a indicatorilor de calitate integrați în algoritmul de calcul FA, standardizați pentru învățământul superior din România, pentru a propune în final un model conceptual de îmbunătățire a acestora pentru ca universitățile să-și poată mări cât de mult fondurile atrase de la bugetul de stat prin FA.

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