

**„LUCIAN BLAGA” UNIVERSITY OF SIBIU  
FACULTY OF ECONOMICS  
DOCTORAL SCHOOL**

## **Ph.D. THESIS**

***The Implications of the Public Financial Management  
in Supporting the University Performance  
Management***

## **SUMMARY**

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## **SUMMARY**

The higher education goes through significant changes globally, due to the influence of several factors such as the growth of the education across borders and of the number of international students, the massification of the university studies, the diversification of the student population, the reorientation of the universities to marketing and branding, the increasing students' expectations concerning the quality of the educational act, the international competition between universities or the introduction of the virtual education. This complex framework of development of higher education is centered around the idea of academic performance, which, in our opinion, depends largely on the management performance of higher education institutions, beyond the quality of staff and the financing sources. **University management** *is today a reality of the academic life, which results from the necessity of optimal functioning of higher education institutions, derived from its way of organizing and the coordination of its various components.*

In this framework, the higher education system in Romania is in a state of almost permanent reform and restructuring since 1990, debuting with this transition from the centralized to the market economy, caused by the changing of the political regime in 1989-1990, passing through worrying demographic evolutions and reaching the global economic and financial crisis of 2008-2010. The consequence was that the issues of the Romanian higher education system, such as the acute underfunding and need to identify different financing sources, adapting university curricula to the labor market, the frequent legislative changes and the unfinished reforms persist, which makes that the competitiveness degree of higher education in Romania remains low, at least compared to the other Member States of the European Union. Among these issues, assuring the funds necessary to carry on normal activities of higher education institutions is critical, this issue being often the basis for many other imbalances manifested in the organization and the functioning of the educational system.

**The motivation** that is the basis of the choice of the doctoral research theme *Implications of the public financial management in supporting the performant*

*university management* is **the importance of the administrative management, and, within it, of the financial one of the university, for the optimal management of the resources that the higher education institution has, especially in the context of the chronic underfunding of the Romanian higher education after 1990.** Thus, the issue addressed in this thesis is highly topical in the Romanian university environment, **its central objective** consisting of analyzing the budgetary financing system of the Romanian higher education and advancing management options through which the academic and administrative management of the universities could compensate the budgetary financing through alternative sources with a predictable and sustainable character.

To this main objective of the research, series of *secondary objectives* have been associated, at the level of both theoretical and applicative approaches. Thus, *from a theoretical perspective, the main secondary objectives* were the following ones:

- (i) *the clarification of the following concepts: public sector, public budget and budget system;*
- (ii) *the foundation of the budget process management at the state budget level;*
- (iii) *the establishment of the framework for analyzing the managerial performance in public institutions;*
- (iv) *highlighting the public management attributes of higher education institutions, on two main coordinates: the academic management and the administrative management.*

Regarding the applicative perspective, *the secondary objectives* of the research considered:

- (i) *the analysis of the Romanian higher education financing system, in the framework of the developments and the mutations taking place at the European level;*
- (ii) *the comparative analysis of the main sources of income of the most important Romanian universities;*
- (iii) *the use of the multivariate data analysis methods, particularly of the cluster analysis and of the principal component analysis, for revealing the link between the budgetary financing and the academic performance.*

To operationalize these objectives, we formulated several research hypotheses, set out below:

- I1. There is a direct link between the quality level of the Romanian universities and the level/the share/the dynamic/the allocation by study type of the basic financing they receive;
- I2. There is a direct link between the quality level of the Romanian universities and the level/the share/the dynamic/the allocation by study type of the additional financing of excellence they receive;
- I3. There is a direct link between the quality level of the Romanian universities and the number of equivalent students, the dynamics of the number of equivalent students;
- I4. The state universities in Romania are heterogeneous according to the basic financing and the additional financing of excellence, both in value and in dynamics;
- I5. The state universities in Romania are heterogeneous according to the basic financing allocation and the additional financing of excellence, on types of studies, both in value and in dynamics;
- I6. The number of equivalent students, in value and dynamics, does not influence the degree of homogeneity of the Romanian universities in terms of financing;
- I7. All the features of the public financing of the Romanian universities are equally important from the perspective of the differences between universities.

*The area of investigation* for the development of this thesis include the Romanian and foreign reference literature, as well as the empirical analysis, developed in the direction of studying the link between performance in the Romanian universities and the public financing, given that the funds received by the universities from the state budget still represent the most important component of their financing.

In order to achieve the objectives enounced and test the hypotheses mentioned above, the Ph.D. thesis is **divided** into *four chapters*, addressing the research topic starting with the general theoretical elements and reaching to quantitative empirical analysis, thus linking the conceptual developments from the relevant literature to the realities of the financial management from the Romanian higher education institutions.

**Chapter I**, entitled “*The management of the public institutions and the performance measurement*” develops the complex problem of the performance in the

public organizations and the role that the budgetary process has in the management of the public institutions in our country.

The performance is one of the key functions of management, applied both at organizational and individual level. A system of performance management works when its objectives are communicated to all employees, the criteria and the individual and departmental performance levels are set out directly connected with the major objectives, the progress of those levels of performance is analyzed continuously used analysis process to determine training needs, developing and rewarding, the analyzing process is used to establish the needs of training, development and recompense. The effectiveness of the entire process is evaluated in order to improve it.

Thus, the objective of this chapter is to present the existing conceptual-theoretical framework regarding the public institutions and their management, starting with the relevance of the budgetary process for them. Based on the relevant literature and the legislation in effect in the field, the chapter presents briefly the relevance of the budgetary process for the public institutions, taking into account the competences and the responsibilities, the methods of dimensioning the budgetary revenues and the expenditures, as well as the stages of the budgetary process. The rest of the chapter focuses on public institutions and their managerial performance, emphasizing the concept of performance and its measurement in the public institutions. The approaches of the authors in different relevant works, courses and scientific papers, that we tried to bring to light to improve the measurement models of performance in the public institutions, are emphasized in an argued manner, without claiming the theoretical and practical exhaustion of the issue handled, given its amplex and complexity.

The theoretical aspects presented in this chapter allow replying to the following question: *Why should an organization measure its performance?* The performance measurement is necessary because, through this, the organizations have the capacity to establish the extent to which the objectives were achieved, to assess their performance and to formulate the future initiatives to improve their performance.

In **the second Chapter**, entitled “*The public financial management of the higher education institutions*” we proposed to offer a broad perspective on the *academic and administrative management* of universities, but also on the ways to improve them. Therefore, we stopped our attention on some aspects which were less covered in the relevant literature and which, in our opinion, deserve to be taken into consideration. Thus, we consider the importance of the academic management directly related to the place the university occupies university in today’s society; consequently, we focused on the university as an institution and the place and the role it plays in contemporary society.

This chapter highlights the attributes of the public management of higher education institutions, on two main coordinates: the academic management and the administrative management. The academic management and the administrative management cannot exist one without the other, and complement each other from the perspective of reaching the strategic and tactical objectives of the university: while the academic management aims to maintain the state of stability and functioning of the higher education institutions in a certain structure, but also to identify those new structures operating optimal in the conditions of the emergence of agents of change both in the internal and in the external environment, the administrative management reflects a strategic approach to the carrying out of the activities and the proper financial-accounting functioning of the university.

The approaches referring to the university academic and administrative management were carried out, in this thesis, in the framework outlined by the principle of the university autonomy, as important as the academic freedom, both being the organizers of the higher education in majority of the democratic countries. The University autonomy is written in the Charter of the University and has to be understood as a flexible instrument to fulfill its noble mission. A strengthened institutional autonomy of the University means the effectiveness and adaptability, the competitiveness, the capacity for creative freedom to produce new and apply new ideas and to experiment. Universities need autonomy to shape students themselves autonomous, able to become leaders, entrepreneurs, pioneers and people able to think for themselves, even before their time.

Closely related to the university autonomy we addressed the issue of the new academic and entrepreneurial university management, in the context and under the influence of the major changes from the environment in which universities operate, changes that have occurred in the last years, and that triggered them dramatic challenges. The main cause that generated the adoption of the term *new management* in the higher education institutions was the dramatic reduction in financing these institutions from the public funds.

We have to mention, in this context, that the university management is experiencing a series of mutations and trends at European and international level, which are sources of learning also for the university management in Romania. Of these, the most important are the following ones: (i) the implementation by the universities of some performant management systems, "borrowed" from the business environment, such as the management by objectives, the project management or the management by budgets; (ii) the incorporation of all the management levels of the university into a strategic management and integrated management system - this would include the strategic management, the quality assurance, the pedagogical

management and the management of the processes - to identify, strengthen and promote the competitive advantages of the higher education institution. Among the strategic objectives of the university, can be getting a higher recognition within five years - for example, ranking in the top 100 universities worldwide in certain international rankings, strengthening cooperation with other universities, research institutions, pre-university educational institutions, companies and interest groups, transforming the university into a secure place, sustainable and attractive for students and members of the academic corp (including the international students and the invited professors) or increasing the accessibility degree of the university for the local people, the international students and the members of the academic corp.

Another concept borrowed from the business to the academic environment is “entrepreneurial university” that can lead the higher education institutions to the abandon of the “bureaucratic management” practices, the increasing concerns for transformation, change, the using of the research and training in the community service activity, offering value orientations, actionable models and cognitive, attitudinal and behavioral styles. Consequently, the institution that assumes the entrepreneurial role must focus on the results and integrate the quality into its own structures, which requires a performant management.

In the category of the many difficulties faced by the Romanian higher education at the beginning of the 21<sup>st</sup> century, an important place is held by the financial issues, from the perspective of ensuring the necessary funds for its activity, this issue producing many other imbalances manifested in the organization and the functioning of the educational system. One of the challenges of the Romanian university management is the chronic underfunding of the Romanian higher education from budgetary funds, especially after the economic and financial crisis of 2007-2009. In this context, the Romanian universities were put in the position to partially replace the public funding sources, on which they counted in the years after 1990, with off-budget sources of financing, but not always easily identified and easily transformed into predictable and sustainable financing sources.

The financing system of the Romanian higher education has undergone a series of transformations and developments after 1990, the most important being generated by the adoption of the National Education Law no. 1/2011, which largely changed the functioning framework of the higher education and, consequently, its financial framework. Nevertheless, the fundamental principle, that is the basis of the elaboration of all the financing methodologies proposed by the National Council for Higher Education Financing (CNFIS) annually, from 1999 up to the present day, was “the money follows the student”, this legal framework not being changed by the Law 1/2011. This principle was operationalized using the first pillar of financing which

centered on the concepts of “equivalent student” and “unitary equivalent student” - both based on the size of the university measured by the number of students, adjusted with the type of education, the study cycle in which the student is enrolled and the field of study in which the student is trained. Along with this pillar, CNFIS proposed and the Ministry of Education (under its various names) applied, a qualitative component, through a set of quality indicators introduced since 2002, but which had changed both in terms of content and number, until 2011 - this indicators included elements regarding the teaching staff and the material resources, but also the scientific research and university management. Since 2011, CNFIS began the adaptation process of the financing proposals submitted to the Ministry of Education in compliance with the legal requirements imposed by the National Education Law no.1 / 2011, and the financing proposals elaborated by CNFIS have been partially implemented in 2012. The law established that the two major financing sources of the educational activities, regardless of its level (pre-university or university) are the state budget and the own revenues, that the educational institutions can use independently. Thus, the higher education institutions can get, as funding, allocations from the budget of the Ministry of Education, under contract, for the basic financing, the complementary financing and the additional financing, the achievement of investment objectives, funding allocated on competitive basis for the institutional development, funds allocated on competitive basis for inclusion, scholarships and the social protection of students, as well as from its own revenues, interests, donations, sponsorships and fees charged under the law to Romanian or foreign natural and legal persons, and from other sources, and according to the law, all these represent own revenues of the higher education institutions. The ranking of the universities, which took place in 2011 according to Government Decision 789/2011 by resorting to the external experts of the European University Association, had an important place in the additional funding allocations. The hierarchy process resulted in the division of the Romanian universities into three categories, according to performance, as follows: (1) universities of advanced research and education; (2) university of education and scientific research, and (3) university focused on education. Among the public universities, 12 were ranked in the first category, 23 in second and 14 in the third category, all the private universities being placed in the third category.

Taking this reality as a starting point, **Chapter III** of this paper, entitled “**The impact of the higher education financing on the performance of the academic and administrative management**” includes a series of theoretical considerations on the financing of the Romania higher education, based on in-depth study of the relevant literature, a presentation of the financing sources in the Romanian higher education and their changes over time, and an analysis of the budget revenues sources of the main Romanian universities.

This chapter of the thesis provides both a conceptual overview and a private image, on the formation and the management of the budgets of the higher education institutions, emphasizing the constraints and the challenges from the internal and external environment of universities on them. At the same time, the chapter addresses the issue of financing from the budget of the Romanian higher education, in a logical order. Thus, the chapter discusses briefly the Romanian higher education system to detect those features which are relevant from the perspective of its budget financing, including by their reporting to the situation of the other countries members of European Union. Subsequently, the financing realities of the Romanian higher education system are raised for discussion, being presented the changes and the developments through which the financing system had passed since 1990, focusing on the period after the adoption of the National Education Law 1/2011, which modified largely the operating framework for the higher education and, consequently, its financing framework. The chapter presents also the main trends manifested in the higher education financing at European level, in order to allow a better understanding of the attributes of the Romanian financing system from the perspective of the competitiveness of the Romanian higher education on the European educational market.

The chapter provides an analysis of the revenue sources from which the most important universities in Romania benefited, namely those classified in the first category – “universities of advanced research and education” - after the classification made by the European University Association in 2011. The purpose of this analysis is to detect the extent to which these universities have managed to adapt their revenue structure to the reality of the chronic underfunding of higher education, by calling upon sources of financing from economic activities (including tuition fees), research activities, European projects with grant etc. The chapter concludes with proposals of management options that the Romanian university management has at its disposal to achieve an authentic diversification of the financing sources of the universities, by attracting financing for medium term and long term, to know its value and to be easy to predict, to gradually replace the budgetary financing. These funds should, at the same time, support the adaptation of the training supply to the labor market requirements, the staff restructuring and attracting valuable staff and the modernization of the equipment and facilities provided to students and staff.

**The last chapter** of the thesis, entitled “*Research concerning the budgetary financing and the managerial performance in the public universities of Romania*” presents a study – a premiere from the perspective of the analysis of the budgetary financing sources of the public universities in Romania, such a research not being done before, although there is series of reports and studies carried out by public institutions in Romania – especially by the National Council for Higher Education

(CNFIS) under the Ministry of National Education and the Executive Unit for Financing Higher Education, Research, Development and Innovation, as well as articles in the specialist press that brought to the fore the situation of the Romanian universities.

The idea that led us during the realization of this last part of the thesis was that we cannot limit only to the presentation of the theoretical concepts without supporting also practically these concepts; otherwise, the formulation of conclusions, opinions or recommendations cannot be achieved given that the only arguments would be those resulting from the bibliographic documentation, without connecting to the real requirements of the Romanian higher education institutions' management.

**The originality of this study** can be identified from two perspectives, as follows: first of all, it is the first study addressing the specifics of budget financing of the public universities in Romania using the sophisticated statistical tools and multivariate data analysis techniques and, second of all, the analysis of the Romanian universities is performed both individually and comparatively, by considering all the public universities in Romania. Moreover, the study is the first one linking directly the specifics of the public financing of the Romanian universities to their ranking in terms of the quality of the educational and research process carried out for the first time in 2011, which allows highlighting some features and trends of the financing otherwise difficult to detect, and the extraction of some interesting conclusions about how public authorities can use the leverage funding for the higher education in order to increase its overall quality.

The chapter is divided into four parts, as follows: the first part provides a review of the theoretical and empirical approaches existing in the relevant literature on the budgetary financing in the Romanian higher education, the second part presents the objectives of the research, the data used and the methodologies used in the statistical analysis and in the multivariate data analysis, the third part discusses the results of the comparative statistical analysis of the budgetary financing sources of the Romanian universities for 2011-2014, and the fourth part brings to the fore the similarities and the differences between the Romanian universities from the perspective of the budgetary financing and of the quality of the study programs by using the cluster analysis and the analysis of the main components as multivariate data analysis methods. The chapter ends with conclusions that may prove useful both in terms of the elaboration of the national policy for financing the Romanian education, and in terms of the financial management of the public resources in the Romanian universities.

The Ph.D. thesis was elaborated on the basis of an ample and complex documentary material, difficult to systematize and concentrate within the limits of this

work. The present demarche, as a result of a variety of disparate approaches, imposed a varied *research methodology*, which mainly focused on:

- *The study of a general and specialized bibliography on the theoretical and practical situation, carried out in order to assimilate and deepen the needed knowledge for the achievement of a scientific work;*
- *To resort to the general-particular or to the particular-general analysis in the presentation and the analysis of some concepts and phenomena;*
- *The achievement of a rich scientific research, through which it was aimed the deepening of certain aspects presented above, in terms of the actual situation, at the level of the Romanian universities;*
- *The implementation of the methods of statistical analysis and multivariate data analysis, with the aim of highlighting those particularities of the budgetary financing of the Romanian universities which should constitute fundamental elements of the university management.*

**The elements of originality** of the thesis consists of: analyzing the bibliographic sources to synthesize the most relevant statements, classifications, features, principles etc. for the proposed research topic; shaping of entrepreneurial university as a new type of university able to face financial, strategic, economic, political, etc. challenges; revealing the mutations that take place in the sphere of public financial management under the impact of the external and internal environmental factors; the comparative analysis of the main financing sources of the Romanian higher education; the critical analysis of the link between the budgetary financing and the performances of the Romanian universities; identifying a set of solutions and management options such as to lessen the gap between universities and to ensure their sustainable development.

From these elements of originality, two of them stand out, in our view, and constitute *personal contributions* to the development of the research. First of all, the thesis proposes an *analysis of the revenue sources from which benefited the most important universities in Romania*, namely those classified in the first category – “universities of advanced research and education” – after the classification made by the European University Association in 2011. The purpose of this analysis is to detect the extent to which these universities have managed to adapt their revenue structure to the reality of the chronic underfunding of higher education, by calling upon sources of financing from economic activities (including tuition fees), research activities, European projects with grant etc. The financial data on which this analysis was

performed come from documents available on the websites of these universities, the period for which the data were collected being from 2011 to 2014.

The most important conclusions that can be drawn from this analysis are: (1) there are important differences from one university to another concerning the structure of available revenue sources, phenomenon that can be explained either through the nature of the domain of study, or through the academic and administrative management skills to attract alternative sources of income; (2) for the majority of the universities analyzed, the importance of the amounts coming from the state budget is decreasing, being replaced by own revenues from tuition fees and other activities; (3) the amounts collected from the research activity are at low levels compared to those from the state budget and from their own revenues, and for some universities they have fluctuating values from year to year, which indicates their unsustainability as basic component of the revenues of the universities; (4) the sums of money from the European funds were an important source of revenue for all the analyzed universities, which raises questions concerning the capacity of the university management to replace them when they will be less available; (5) the incomes from productive activities, including the activity of the dormitories and the canteens, are at low levels, but fairly constant, such activities can be an interesting source of income in the future, but currently not enough exploited by the Romanian universities. In our opinion, these results show a rather reactive approach of the university management to the financing constraints faced by universities, and not a proactive one.

For this reason, we proposed a series of *management options* that the Romanian university management has at its disposal to achieve an authentic diversification of the financing sources of the universities, by attracting funds for medium term and long term to know their value and to be easy to predict, to gradually replace the budgetary financing. Among these options available to the university management, there are the following ones: the collaboration with private companies, the development of the scientific research, attracting sponsorships, the use of the European projects, attracting students paying tuition fees, attracting foreign students, the implementation of the “loans for studies” system, supplying full payment programs - such as programs tailored to the requirements of some companies or post-graduate programs, the development of lucrative activities and, not least, the sale of services and the rental of facilities. These funds should, at the same time, support the adaptation of the training supply to the labor market requirements, the staff restructuring and attracting valuable staff and the modernization of the equipment and facilities provided to students and staff.

The second particular element of originality of the thesis is the *critical analysis of the link between budgetary financing and the performance in public universities in*

*Romania*. Its originality may be identified from two perspectives, as follows: first of all, this is the first study addressing the specifics of the budget financing of the public universities in Romania using sophisticated statistical tools and multivariate data analysis techniques and, second of all, the analysis of the Romanian universities is performed both individually and comparatively, by considering all the public universities in Romania. Moreover, the study is the first one linking directly the specifics of the public financing of the Romanian universities to their ranking in terms of the quality of the educational and research process carried out for the first time in 2011, which allows highlighting some features and trends of the financing otherwise difficult to detect, and the extraction of some interesting conclusions about how public authorities can use the leverage funding for the higher education in order to increase its overall quality.

Concretely, **the study had two objectives:** (1) *The highlighting of the financing specific of the Romanian universities according to the category of the university on financing types - core funding, additional funding of excellence and additional funding;* (2) *The emphasis of the similarities and differences between the public universities in Romania from the perspective of specific public funding* by resorting to the multivariate data analysis, more specific to the cluster analysis and the main component analysis.

For the achievement of the study, data contained in the Annual Reports of CNFIS in the period 2012-2014 were used, based on them being built a set of 22 indicators for each university in Romania. The indicators used in the statistical analysis and in the multivariate data analysis took into account the value of the basic financing and of the additional funding of excellence received by each of the 48 universities considered, their share in the total budgetary financing, the allocation of these types of financing on study degree - bachelor, master, doctoral, as well as the number of the equivalent students. The analysis took into account the values of the indicators for each year of the three included in the period of 2012-2014, and dynamic indicators for the same period.

The comparative situation of the financing of the universities was analyzed both by the whole group of 48 universities, and by each of the three categories of universities in order to observe the extent to which there are differences between the Romanian universities when their level of performance is different - we considered the category to which the university belongs as reflecting the relative performance degree of the university, the universities from the first category being those with the highest performance, while those from the third category have the lowest degree of performance.

Romanian universities financing indicators were used in the multivariate data analysis in two ways: (1) by applying the hierarchical and iterative algorithms of clustering, with the aim of highlighting the particularities in the financing evolution for various categories of universities in the period 2012-2014; (2) using the principal component analysis, as a method of identification of those features of the financing that lead to the most significant differentiation between universities.

The results that we have reached in this part of the paper are numerous and many of them interesting and even surprising, the most important being the following ones:

***The results of the statistical analysis:***

- For most indicators used and for all periods considered, frequency distributions indicated the existence of a financing asymmetrical on the left and long queues, which indicates the presence of some financing located far from the average - in other words, it exists, in all years and for almost all the indicators, universities that received funding significantly higher (usually) than the average;
- The dispersion of the indicator values was, usually, higher than the average for most indicators studied, indicating a high dispersal of the parameter values between universities;
- At an average value, the universities from the first category received more funding, of all types, compared to those from the second and the third category, in the period in question; but, at the average weights of the total financing received by the universities, those from the second and the third category benefited from higher values;
- For all indicators, putting the universities in three performance categories generated the presence of observations of extreme type - universities that received funding significantly higher or lower than the average category they belong to can be identified, this conclusion being valid also for the weight indicators;
- There are several universities that stand out by placing, in almost all years and for many of the indicators, in the extremes, as follows: Polytechnic University of Bucharest received consistently both core funding and additional funding of excellence in values much larger than the group of universities from the first category; Constanta Maritime University has such a position in 2014, which could suggest a “repairing” behavior of the financier towards it, compared to the situation in previous years; University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, from the first category, held positions of extreme negative in

the first two years of the period, but a position of extreme positive in the last year, which may indicate a different “repairing” behavior;

- The number of universities holding extreme positions, almost regardless of the indicator, is the largest for the second category of universities, indicating differences relatively higher on financing, but also a higher degree of heterogeneity between these universities compared to those from the second and from the third category.
- ***The results of the cluster analysis and of the main component analysis:***
  - as we make the transition from 2012 to 2014, the degree of heterogeneity of the universities, from the perspective of the financing, increases;
  - the amalgamations that include variables from the all three years tend to generate a number of clusters higher compared to those who are considering a single year, and the distance of connection between the first and last clustering is higher, also for amalgamation including variables from all the years considered, suggesting that, no matter the funding variables considered in the cluster analysis, the differences between universities in terms of funding between years are higher than those existing in a single year;
  - introducing a number of equivalent students in amalgamations induces a greater degree of heterogeneity in the medium and high funding for the universities in Romania;
  - the public universities in Romania were closer, as a group, from the perspective of the funding changes from year to year, compared to the ways of allocating the funding on categories of studies;
  - the academic performance is well correlated with the total financing value and importance of the core financing and of the additional financing of excellence, but also with the allocation of funding by type of degree;
  - the additional funding allocation of excellence on types of curricula is a better differentiator between universities in terms of the comparative financing with the core funding allocation, the number of equivalent students and even the absolute value of the core funding and the one of excellence;

Regarding the 7 research hypotheses formulated and tested in the fourth Chapter of the thesis, the **conclusions** we reached are the following ones: 3 hypotheses fully validated (I2, I4 și I5), 2 hypotheses partially validated (I1 și I3) and 2 hypotheses invalidated (I 6 și I7):

- **Hypothesis no 1** was partially validated. Thus:

- ✓ the hypotheses referring to the existence of a direct link between the quality of the Romanian universities and (1) the core financing received by them were validated; (2) as well as the allocation of the core funding on types of degree (bachelor and master)
- ✓ they were partially validated the hypotheses referring to: (1) the existence of an indirect link between the quality of the Romanian universities and the share of the core funding in the total of the financing received by them for some years from the period of analysis, with a direct link to other years; (2) the existence of a direct link between the quality of Romanian universities and dynamics of the core funding for the first sub-period analyzed, while for the second sub-period the link is indirect;
- **Hypothesis no 2** was fully validated. Concretely:
  - ✓ they were validated the hypotheses referring to the existence of a direct link between the quality of the Romanian universities and : (1) the level of additional funding of excellence received by them; (2) the share of the additional funding of excellence in the total funding received by them; (3) the allocation of the additional funding of excellence on types of degree (bachelor and master); (4) the dynamic of the additional financing of excellence;
- **Hypothesis no. 3** was partially validated:
  - ✓ it was validated the hypothesis referring to the existence of a direct link between the quality of the Romanian universities and the number of equivalent students;
  - ✓ it was partially validated the hypothesis referring to the existence of a direct link between the quality of the Romanian and the dynamics of the number of equivalent students for some years, while for other years the link was indirect.
- **Hypothesis no. 4** was fully validated.
  - ✓ they were validated the hypothesis referring to the heterogeneity of the universities in Romania according to the core funding and the funding of excellence, in value and dynamics.
- **Hypothesis no. 5** was fully validated.
  - ✓ they were validated the hypothesis saying that the state universities in Romania are heterogeneous according to the allocation of the core financing and of the additional funding of excellence on types of degree, both in value and dynamic.

- **Hypothesis no 6** was invalidated.
  - ✓ they were invalidated the hypothesis according to which the number of equivalent students, in value and dynamics, does not influence the degree of homogeneity of the Romanian universities from the perspective of financing.
- **Hypothesis no 7** was invalidated.
  - ✓ they were invalidated the hypothesis referring to the fact that all the characteristics of the public financing of the Romanian universities are equally important from the perspective of the differences existing between universities.

Regarding the two invalidated hypotheses, the results that we got show that: (1) the number of the equivalent students, in value and dynamics, influences the degree of homogeneity of the Romanian universities from the perspective of the financing and (2) certain features of funding lead to a sharper differentiation of the universities compared to others.

The results from empirical analysis allowed us also to formulate a set of *managerial solutions* - from the perspective of both the academic and administrative management - to lead on medium term and long term to *the increase of the sustainable financing of the universities*, including from public sources, as follows:

- (i) *Linking the financing to the results obtained and/or the objectives undertaken by the universities, by developing university policies which focus on clear and fair criteria of measurement of the performance and on the stimulation of the scientific performance;*
- (ii) *Improving the image of the university from the perspective of the perception of the quality of the educational services offered, including by referring to the international rankings, which could lead to attracting more students, both Romanian and foreign, but also a more efficient staff;*
- (iii) *Building a stimulating academic environment, that should be attractive to all interest groups – we included here not only the financial incentives to boost the performance, but also the quality of the working environment, the reporting relationships and the labor relations, the career development opportunities etc.*
- (iv) *Increasing the internationalization degree of the university and realizing the importance of this development trend not only from the perspective of the image of the university, but also for financial reasons;*

- (v) *Providing advanced educational programs and developing specific programs for the private sector, including through the involvement in the long-life-learning, far less present in the Romanian society;*
- (vi) *Calling upon specific financing sources to increase the social involvement degree of universities and to stimulate a higher presence locally, especially for the small universities, primarily developed locally and which have a geographically limited student base (these features tend to be specific especially to the universities from the second and the third category);*
- (vii) *Restructuring the universities, both at academic and administrative level, aiming at increasing the efficient use of resources, by comparing the results;*
- (viii) *Finally, introducing the principles of the strategic management at the university level, in order to identify and strengthen the competitive advantages of the institution.*

The final part of the Ph.D. thesis includes the synthesis of the resulted conclusions from the analysis of the phenomena studied in this paper, by the pertinent highlighting of the personal contributions and of the elements of originality that we tried to bring to light of the management of budgetary systems in the higher education institutions, not claiming that they have been totally exhausted, both theoretically and practically.

We consider that through this work we have undertaken considerable effort on building a relevant scientific demarche to the domain and original through the quantitative approaches, which can represent a useful analysis from the perspective of the academic and administrative management of the Romanian universities. Despite the difficulties in collecting the data necessary to implement the methods of the multivariate data analysis, we believe that the results we reached, the first of this kind in the relevant literature from Romania, are a starting point for carrying out more ample analysis, on which to build a future performance budgetary financing system for the Romanian universities. At the same time, the Romanian university management must be open to new and innovative financing options, which can be accessed permanently and permit to strengthen and improve the competitive advantages that universities now have insufficiently.

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