

Evaluation of the Effectiveness of Management Development Institutions of Higher Education on the Basis of the Factor and Criterion Model

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ABSTRACT

The relevance of the investigated problem is conditioned by absence of the single approach to the common criteria and mechanisms of a pedagogical educational establishment's assessment; the current assessment principles of planning and management are out-of-date. The aim of this article is to analyze theoretical approaches and concepts of management efficiency; to develop an assessment model to identify management efficiency of an educational establishment of pedagogical profile of higher education on the basis of the distinguished parameters, factors and criteria. This model was implemented in 6 universities of Russia and involved the participation of 212 teachers and 680 students. The main methods of our research are: theoretical analysis of scientific literature in area of philosophy, psychology, pedagogics and management to determine the concept "Management of a pedagogical institution of higher education"; designing a factor-criterion model, which would allow to consider this problem as a complex concept and assess the management efficiency of an educational establishment of pedagogical profile of higher education. The concepts (target, system, balance of interests, functional, compositional) and approaches (integral, level, time) of management efficiency assessment are analyzed in the article. Two groups of parameters of management efficiency of a higher educational establishment are distinguished. The first group includes parameters that characterize activity of an institution of higher education: economic efficiency, social efficiency, quality of education. In the second group, parameters that characterize management are included: orientation on innovations, human resources policy, and management system. These parameters embrace all aspects of an educational establishment activity and were chosen as the basis of factor-criterion model of management efficiency assessment of an educational establishment of pedagogical profile of higher education. Selected parameters in this model are specified by factors and criteria. The materials of the article present a practical value not only for educational establishments of pedagogical profile but also for the whole system of higher professional education. The presented factor-criterion model is a tool for assessing management efficiency of different educational establishments.

KEYWORDS

Management, factor-criterion model, management efficiency assessment, parameters of management efficiency of an institution of higher education

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Introduction

Global challenges of the XXI century and changes in public-political life of Russia at the present stage has sharply raised the question of changing approaches to management of institutions of higher education. Among modern models of educational systems management, the most common are those that lead the institution to development, innovations. However, despite intensive study of management efficiency of educational institutions, the issue of educational institutions management today is mainly developed for secondary schools. The scientists have mainly focused on the study of certain issues of a comprehensive school management, a school head's activities, planning work of the institution. Management of higher educational institutions as a socio-pedagogical system based on broad autonomy and democratic principles, where a personality ready for self-development and self-improvement is formed, have not found an adequate scientific justification and is based mainly on regulatory and instruction documents (Tsehmistrova & Fomenko, 2005; Ibragimov et al., 2016; Can, 2016; Shaidullina et al., 2015). Thus, fundamental ideas of educational institutions management can serve as the foundation for research on management of educational institutions of pedagogical profile of higher education.

An educational institution of pedagogical profile, as well as any institution of higher education may be either in operational or in development mode; in operational mode management ensures the implementation of existing national requirements and standards, and in development mode, management must ensure realizing of potential possibilities of educational institutions due to the implementation of innovations.

Taking into account the research on the problem, we believe that management of educational institutions of pedagogical profile of higher education is a component of the whole activity of subjects of management of higher educational institutions. Management ensures continuous improvement of education quality, achievement of qualitatively new results by creating special organizational and pedagogical conditions and introducing modern management functions (Gorobets, 2014; Kashina et al., 2016; Masalimova et al., 2014).

Management, as any other activity, requires a specific assessment algorithm to determine its efficiency. Analysis of current management efficiency assessment of educational institutions shows the diversity of these procedures. Management efficiency can be assessed according to such parameters as: quality of implementation of development programs; social tone of the subject of the process of development management; operational readiness of the subject of management to self-directed development; intensification of reflexivity of the subject of management; the sensibility of the subject to external management actions (Kondruh, 2003; Kamalova & Raykova, 2016). The analysis scheme of an educational environment as to identification and assessment problems on a university, faculty and department levels is designed (Konoplina, 2000; Gabdrakhmanova & Guseva, 2016). The criteria for management assessment in innovative educational institutions are: social tone of the subject (person, social group); practical readiness of innovative educational institutions (component, community, individual) to manage their development (self-development); the criterion of intensification; the criterion of improvement; the reflexivity of a subject; a subject's susceptibility to external management actions;

implementation quality of development programs (Ostapenko, 2011). Recent trends in higher education require the theoretical understanding of different concepts and approaches to management efficiency assessment, identifying parameters, factors and criteria for the factor-criterion model of management efficiency assessment of educational pedagogical institutions of higher education.

Methodological framework

In the course of research we used theoretical analysis, generalization and systematization of foreign and domestic studies to determine the concept "management of pedagogical university".

The basics of the factor-criterion model that allows us to consider the problem holistically and to assess the effectiveness of management of educational pedagogical institutions of higher education are the scientific approaches to management, such as:

- system approach, the main principles of which are interaction and interdependence of all components, openness, integrity, integrations, purposefulness, interdependence, controllability;
- process approach, which considers management as a hierarchy, operations, subordination of individual interest, enthusiasm, team spirit, interrelation of different management functions;
- activity approach, which allows us to consider management efficiency as focused on personality development, implementation of individual and group forms of work, optimal combination of external assessment with self-control and self-assessment;
- reflexive approach that allows management efficiency assessment to focus on self-determination of the educational institutions development, on collaboration, feedback, external environment, structured tasks and content of management, on initiatives and individual responsibility.

Results

The concept of "management efficiency" have not yet received a clear definition and interpretation, neither in scientific literature nor in the practice of management. In the scientific management literature, there are attempts to divide the concepts of "management performance " and "management efficiency". The management performance is understood as a focus on creating products or services that can satisfy certain needs, to achieve outcomes appropriate for stated objectives of management. In this sense, the concept of "management performance» is a result, effect, which a subject of management reaches influencing an object of management.

The concept "management efficiency" is connected with difference of the terms "effect" and "efficiency". An effect is an outcome of activities, and efficiency is characterized by the ratio of the effect to the cost of resources that provide the effect (result). The application of these qualitative dependencies for quantitative assessment of management effectiveness are hindered by a number of circumstances connected with the concept of "efficiency" (Bukina, 2006):

- 1) a problem of evaluating a huge number of social and production-economic results that cannot be measured with a single measurement tool;



2) it is difficult to attribute the obtained results to a particular subject of management or a type of management, it is practically impossible to divide them between individual subjects of management and management influences.

3) it is necessary to take into account the time factor, as many management activities have a prolonged effect after that is connected with human psychology, with a gradual change in their behaviour;

4) it is improper to consider the results of management processes to be the results of management activities only, as most activities are carried out not only by leaders, but by the whole team.

A significant number of definitions of management efficiency indicates that the authors apply different concepts and approaches. Let us take a closer look (Zhuravlev et al., 2004).

The target concept of management efficiency reflects purposefulness and rationality of the organization. According to this concept, the organization aims at achieving certain goals, and management efficiency describes the degree to which goals are achieved. According to this concept, management efficiency has a specific name - management performance. The following parameters are used: the amount of services provided, the market share of the organization, the range of services, the quality of services etc.

The system concept takes account both internal factors and external environmental factors, and management efficiency characterizes the degree to which an organization is adapted to external environment. This concept is based on two important positions: 1) the survival of the organization depends on its ability to adapt to environmental demands; 2) a full cycle of "input - process - output" needs to be the center of management attention.

The concept of management efficiency "balance of interests" is based on satisfying expectations, hopes, needs, and interests of all parties and groups that interact in the organization and with the organization and management efficiency is characterized by the degree to which the balance of interests of all stakeholders of the organization is achieved. Important ideas of the concept are: - each person and each group in the organization trusts that the organization will stand for their interests; - the organization is effective when it satisfies interests of a group or a person who control the most important work site or resource at the moment.

The function concept of management efficiency considers management from the point of view of work organization and management staff functioning; management efficiency is characterized by comparison of results and expenses for a management system. The following parameters measure the outcome of management work: reducing complexity of managerial work; reducing the management staff; reducing the processing time; reducing the working time of managers; reducing the managerial personnel turnover etc.

The compositional concept of management efficiency determines management efficiency by the degree to which managers influence the whole performance of an organization. The performance parameters are: productivity, product cost reduction, profit and sales growth, the efficiency of management apparatus and the like.

Along with the above concepts, the theory and practice of management has developed three most common approaches to evaluating management effectiveness: integrated, level and time.

The *integrated approach to management efficiency assessment* is based on the synthetic (integral) index, which covers a number of separate management parameters. This approach has emerged as one of the options to overcome inadequate attempts to reflect multi-faceted management efficiency in general. The basic formula for calculating the synthetic index of management efficiency (W) has the following form:

$W = f(P_1 + P_2 + P_3 + P_n)$, where $P_1 \dots P_n$ - separate management efficiency parameters.

The *level approach to management efficiency assessment* identifies three levels of performance: 1) individual; 2) group; 3) institutional: it also describes related factors that affect each of them. Management efficiency in this case is formed as an integrated result of individual, group and organizational performance based on synergistic effect.

The *time approach to management efficiency assessment* identifies short-, medium-, and long-term periods; for each period there are specific criteria for management efficiency assessment. The main task of management within this approach is an organization's ability to maintain its position within the environment.

It should be noted that in the conditions of market economy and competition an important general criterion for management efficiency assessment is a company's competitiveness, which can be determined by its rating, a parameter, characterizing its place among other companies. A high rating (and its growth) reflects a high level (growth) of an organization's management efficiency.

Our attention was drawn to the approach, which was presented in the monograph "Management of a higher educational institution in the conditions of innovative economy" (Asaul & Karupov, 2007). According to this approach, the management efficiency of a higher educational establishment includes three groups of parameters: - parameters of a higher educational institution's activity; - parameters reflecting dependencies between controlled and controlling systems; - parameters that characterize the management system itself. These parameters in turn are divided into more specific ones, giving an opportunity to cover all aspects of an institution's activities. The given approach and the essential content of the concept "management" allows us to identify parameters of management efficiency assessment in pedagogical educational institutions of higher education.

Taking into account that parameters of management efficiency assessment in pedagogical institutions of higher education should reflect both a higher educational institution's activities and the system of management with all its components, we can define two groups of parameters of management efficiency of pedagogical institutions of higher education:

- parameters characterizing an educational institution's activities;
- parameters characterizing the management system of a pedagogical university.

The components of the first group are the following: economic efficiency; social efficiency; the quality of education.



The second group of parameters consists of the following components: innovative orientation; human resources policy; the system of management.

These parameters are to be assessed according to the factors and criteria that are selected based on the concept of "management of educational institutions of pedagogical profile of higher education". They are shown in figure 1.

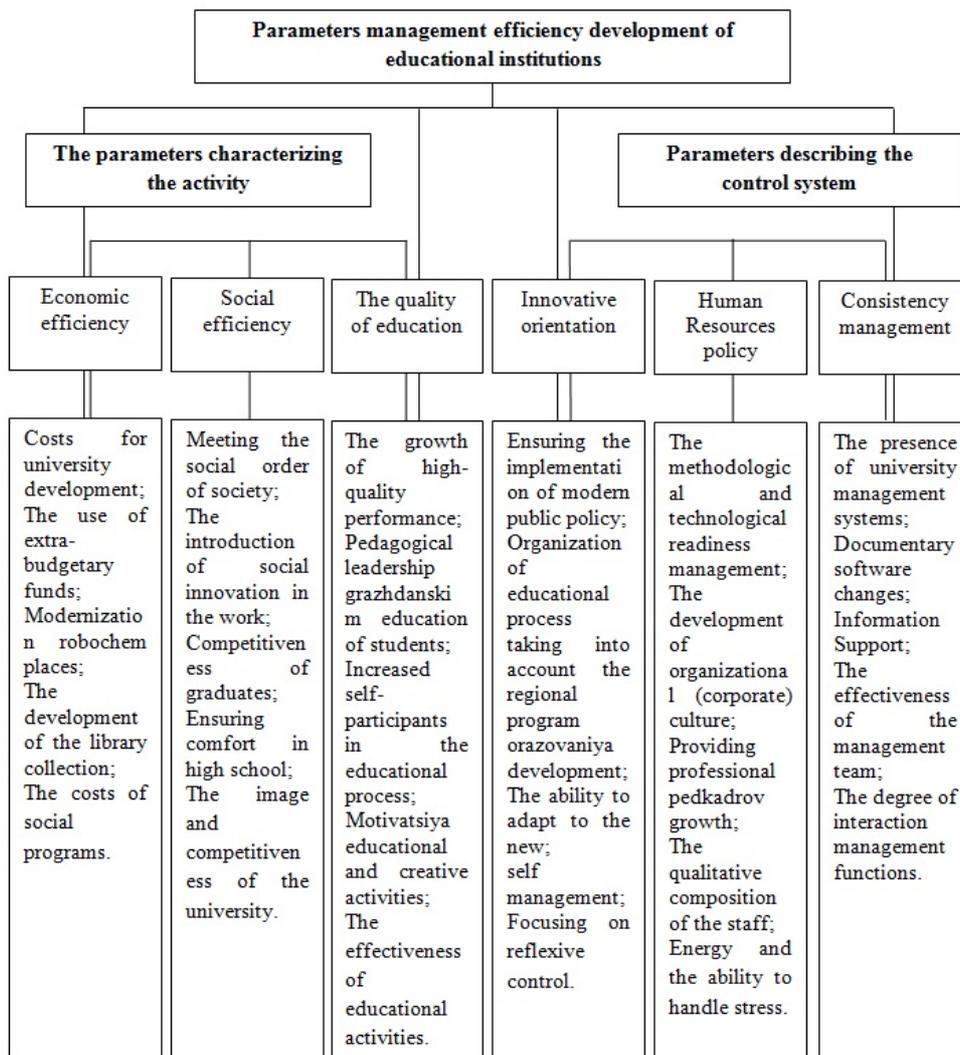


Figure 1. Parameters of management efficiency in the educational institution

Presented parameters cover all the management activities of a higher education institution.

The basis for the factor-criterion model of the management efficiency assessment of an educational institution, which is given in Table 1, is Basic qualitative models of activities (Elnikova, 2004).

The main objective of the model is to develop a common approach to the assessment of management efficiency at various stages of institutions of pedagogical profile of higher education activities.

Table 1. Faktorno-criteria evaluation model development management of the educational institution of higher education pedagogicheckogo Profile

The "cost-effectiveness"	
Factors	Criteria
Costs for university development	1 Allocation of funds for innovative projects
	2 Funding for scientific research and experimental activities
	3 Allocation of funds for the development of fixed assets
	4 The allocation of funds for social programs
The use of extra-budgetary funds	1 Profit from the sale of educational services
	2 Off-budget financing target programs
	3 Repairs
	4 Addition of fixed assets
Upgrading jobs	1 Create automated robochem places management team
	2 Create automated robochem places teachers
	3 Creation of conditions for distance learning students
	4 Conversion of classrooms and laboratories
The development of the library collection	1 Total volumes (per student)
	2 Provision of textbooks and manuals
	3 Security program over literature and digital educational resources
	4 Development of didactic and methodological foundations
The costs of social programs	1 Promote and encourage experimental activities of teachers and students
	2 Bonuses gifted students
	3 The cost of creating safe working conditions and training
	4 The cost of rehabilitation of teachers and students
The "social efficiency"	
Factors	Criteria
Meeting the social needs of society	1 Meet the public demand for new skills
	2 Meeting the demand of the population in educational services
	3 Meeting the needs of employers in high-quality graduates
	4 Orientation of education to world standards
Introduction to the work of social innovation	1 Orientation activities of the university to the social transformation of society
	2 Establishing links with NGOs



	3	Public involvement in the sponsorship
	4	Participation of non-governmental organizations in addressing the problems of education in government
The competitiveness of graduates	1	Employment of graduates in the specialty
	2	Zaprasy on employment of graduates
	3	Invitation to undergraduates supervised practice, work
	4	Orientation of graduates at higher education level
Ensuring comfort in an educational institution	1	Coordination of collective activity through dialog and understanding
	2	Maintenance and support positive psychological climate
	3	Provision of social protection, preservation and strengthening of health of students and staff
	4	Creating the conditions for the productive activities of the collective of teachers and students
The image and competitiveness of the university	1	The effectiveness of image attributes (logo, logo, anthem, newspaper, etc.)
	2	Increasing university ranking among the population
	3	Formation of positive public opinion about the activities of the university
	4	Refocusing public opinion with the traditional vision of education in the modern
The "quality of education"		
Factors		Criteria
The growth of high-quality performance	1	The gradual transition from the accumulation of knowledge amount to mastering skills of self-educational activity
	2	Maturity of life competences of students
	3	Increasing the degree of self-determination of graduates
	4	Orientation of educational content on the students' needs
Pedagogical leadership of civic education students	1	Knowledge of modern education theory and legislative and regulatory knowledge
	2	Organizational and technological, diagnostic and prognostic, control and correcting skills
	3	Persistent socially significant motivation
	4	The ability of graduates to adapt to the surrounding environment
Increased self-participants in the educational process	1	Positive dynamics vzaimosootvetstviya processes of teaching and learning
	2	Availability temple educational success of students level
	3	The positive development of the abilities of students and teachers in the educational process
	4	Permanent desire for self-realization and self-improvement
Motivation of educational and creative activities	1	The optimum ratio of external motivation to development and self-motivation
	2	The ability to steriotipy in activity
	3	Vision novih opportunities for university development
	4	Orientation of students and teachers on the achievements and success

The effectiveness of educational activities	1	Flow indicators of educational and research activities
	2	The final performance of graduate training
	3	The level of achievement of education standards
	4	Participation of teachers and students in conferences and seminars on the issue of the development of education
The "innovation-oriented"		
Factors		Criteria
Ensuring the implementation of modern public education policy	1	The implementation of the main directions of the State program of development of Russian education in the twenty-first century
	2	Execution of documents regulating the state policy in the field of education
	3	The availability and effectiveness of the development program of the educational institution
	4	Development and implementation of targeted programs and innovative projects
The organization of educational process in view of the regional program of development of education	1	Taking into account regional needs for network specialty and educational institution plan
	2	Participation of teachers and students in regional programs of education development
	3	Participation of teachers and students in the development of innovative projects in the region
	4	Organization and career guidance for young people
The ability to quickly adapt to the new, both inside and outside the educational institution	1	Perception and acceptance of feelings and needs of others in the dynamics and changes
	2	The ability to adapt their own behavior and actions according to the needs and feelings of others
	3	The ability to define and organize the establishment of effective communication
	4	Implementation of new student learning and education technology
Self-organization	1	Creating a self-government system
	2	The introduction of self-technology on the basis of humanization and democratization principles
	3	Participation of public organizations of the university in the development and strategy of the organization
	4	Establishing partnerskih relations with self-government bodies of other educational institutions
Focusing on reflexive control	1	Development of reflexivity students, teachers, administration
	2	Participation of teachers and students in summarizing the work of the university, faculty, departments
	3	The ability to study and understand the other person, the ability to accept his point of view and look at yourself from his position
	4	Using reflective approach in the educational process
The "human resources policy"		
Factors		Criteria
The methodological and technological readiness management	1	Knowledge and use in the practice of modern theories of learning, training, management; theoretical conceptual legislative and normative acts on education
	2	The ability to acquire new knowledge in domestic and foreign experience

	3	The use of information and computer technologies in management
	4	The optimality of promoting information flows
The effectiveness of the management team	1	Cohesion and interchangeability of members of the management team
	2	Partnerships in the team
	3	Optimal allocation of management responsibilities between the administration
	4	The implementation of the principle of delegation of authority
The degree of interaction management functions	1	Specificity manage and control subsystems, the nature and form of their interaction
	2	Coordination of interaction of all units
	3	The relationship of administrative and public control
	4	Interaction of educational institutions and the social environment

The basis of the quotient-criteria model of development management of the educational institutions of pedagogical profile of Higher Education put qualimetric approach.

Qualimetry - branch of science that studies the problems of methodology and comprehensive quantitative assessments of the quality of any objects - objects or processes (Elnikova, 2004).

By the system of quality control parameters include such features as: informativeness, integrative, optimal accuracy, conclusiveness, manufacturability (Lobashev, 2005). There is an algorithm for creating a quotient-criteria model, which contains three stages. At the first developing step hierarchical block diagram of the research object properties. During this operation, an integrative object property assessment is decomposed on the properties of the first order - parameters (from the Greek parametron - measured), which, in turn, according to the rules mereological division laid out on the properties of the second order - factors (from the Latin Factor - The making), and the last - on the third-order - simple properties. The second step determined by the weight coefficients for the factors that characterize the significance of a particular factor among all others. The sum of all the weighting parameters must be equal to unity. A similar procedure is carried out and criteria. The value weighting is determined by the method of expert estimations. In the third stage of quotient-criterial modeling results are reflected in the relevant table (Table. 2).

Table 2. Faktorno-criterion model of development management of the educational institutions of pedagogical profile of higher education

Options (R)	Vesomost- Vp	Partial evaluation parametrov- P	Factors (F)	The weight - vph	Partial assessment of factors -F	criteria (K)	The weight - VR	Partial evaluation criteria - K
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Thus, management of pedagogical institutions of higher education provides a continuous improving of educational potential of an institution and achieving good results. The efficiency of management activities is determined through assessment of such parameters: economic efficiency, social efficiency, education quality, innovative orientation, human resources policy, and management system. The tool of management efficiency assessment in a pedagogical university is the factor-criterion model of management efficiency.

Discussions

The research analysis on the problem of management efficiency assessment of pedagogical institutions of higher education shows that such studies are very few; they are mainly carried out at the regional level within the framework of pedagogy or sociology of education. This problem is largely studied in the field of management of a comprehensive school.

Management efficiency assessment in the field of educational management is carried out using a system approach, which involves analysis of socio-pedagogical conditions of the management system improvement and basic parameters characterizing each condition (Danilenko, 2007).

Management efficiency in an educational institution can be evaluated using axiological approach, which involves identifying matching values-goals, values-objectives, values-means, and values-needs of all members of educational process (Marmaza, 2010).

A resource approach can assess a compliance status of various controlled subsystems to the requirements of educational services market; it can show if resources of an internal educational environment are used optimally (Mazur, 2003). Though external factors of management improvement are rather important, assessing the management efficiency of internal processes should be in the focus of the study, which is in the competence of a synergistic approach.

The researchers identify three main problems in assessing management efficiency of educational institutions (Nazarenko, 2016). The first problem is that management efficiency assessment of an educational institution is understood as simply changing the traditional quantitative parameters such as the number of students, the qualification of teachers, the condition of material-technical base, the number of competition winners, the number of publications etc. However, for the purpose of objective management activities assessment, it is necessary to consider not only quantitative but also qualitative parameters, which would reflect the character of interpersonal relations of management subjects, enthusiasm of teachers, community, and students in taking administrative decisions, delegating the leader's authority to subordinates, etc. That is, the management efficiency of institutions should be considered from the standpoint of management optimality and feasibility, on achieving both quantitative and qualitative results.

The second problem is related to the management functionality assessment. The development of modern educational institutions cannot be successful without taking into account the needs of the educational services market (Garifullin, 2011). Therefore, to transfer an educational environment to a new level, to choose the most effective means and ways of managing this process, to use potential opportunities of a university to improve the quality of educational services, the head of an educational institution should apply advisory,

representative, marketing-oriented, analytical and predictive functions of management.

A special attention in management assessment of educational institutions requires a diagnostic system itself that should meet current requirements of management practices. A uniform diagnostic system has not been yet created, and that is the third problem. Due to the fact that the objectives of a higher education institution's functioning and developing are primarily related to social norms, competence requirements for students, the management efficiency is assessed in terms of graduates' competences. However, the generalized object of assessment should be the results of management activities of managers as for achieving goals and objectives (Nazarenko, 2016).

Despite the fact that the above problems were studied in the context of secondary schools management, the same problems are relevant in assessing management in pedagogical higher education institutions.

In the theory and practice of higher education institutions management, several approaches to solving the problem of management efficiency assessment have been proposed. According to the targeted and systemic approaches, management assessment in a pedagogical university can be carried out through the analysis of such parameters: time, financial costs, materials, teachers' efforts, teachers' motivation for changes, technologies, technical tools - at the level of university, faculty, department (Konoplina, 2000). To identify deviations from established norms and improve the management efficiency, the content and methodology of problem-oriented analysis of the university educational system was proposed; this analysis is based on monitoring studies for further collecting and processing information on operation of the managed and managing subsystems (Lysikova, 2004).

Among the methods of management efficiency assessment of an organization, the most suitable for a university context is the methodology BSC (Balanced Scorecard). It is a balanced scorecard (BSC), which involves the evaluation of some important groups of key performance parameters related to implementation of the strategy of an organization's development: financial parameters, customer parameters, internal parameters, parameters of learning and development. The attention is mostly paid not to individual parameters, but to their interaction and balance (Sidorov & Vorobyova, 2005). On the principles of strategic management the model of restructuring the external assessment system of a university was developed. It is based on self-assessment activities and analysis of higher education institutions mission in the framework of the education quality assurance (Kashuk, 2007).

Modern approaches to efficiency assessment of higher education institutions (both approved methods, and those developed by various authors) can be divided into several key areas: compliance with licensing and accreditation requirements; quality of educational services and professional qualities of the graduate; efficiency of budget expenditures on higher education; efficiency of commercial activities of the university; rating of a higher educational institution (Rivchun, 2010). We proposed the method of estimating integral and individual parameters of efficiency of the innovation strategy of the university, based on comparison between achieved outcomes of innovative development of the university and corresponding benchmarks. The benchmark parameters of a university functioning are normative values that adequately reflect strategic



innovative development of the education sector, the national innovation system, and international experience in this sphere (Kanapinov, 2012).

The analysis of research allows us to draw the following conclusions:

— all assessment methods cover different aspects of efficiency of institutions of higher professional education;

— in the process of analyzing a university management assessment we observed discrepancies in approaches, instruments of assessment and result parameters;

— the practice of using the above approaches can only partially be used when assessing the management efficiency of higher educational institutions of pedagogical profile;

— for assessing an integral management efficiency of pedagogical institutions of higher education, the basic parameters, factors and criteria are to be further clarified.

Conclusion

It is established that management efficiency assessment in educational institutions of pedagogical profile of higher education requires an integrated approach to the choice of assessment parameters. Taking into account different concepts and approaches to management efficiency assessing in educational institution and the nature of management in pedagogical educational institutions we defined the parameters of such management assessment: the parameters characterizing activities of a university and the parameters characterizing a system of management. Given parameters are detailed in the factor-criterion model of management efficiency assessment in a pedagogical university; this model is based on qualimetric approach.

In view of the fact that the presented model reflects all functions and tools of managerial activity, the information of this article may be useful for heads of educational institutions of different levels and professional orientation. This model implies cyclical management efficiency assessing of an institution that provides continuous monitoring of both quantitative and qualitative changes in the management system of educational institutions. The presented factor-criterion model is not static in nature; it may be supplemented, modified according to the current requirements to the educational activities of higher education institutions that makes researchers face new.

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