
Formation of the System of Management of Supporting University on the Basis of Strengthening of Communication Component

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Abstract:

The article deals with changes in the system of management of educational establishments of higher education caused by creation of supporting universities. The program of creation of such universities supposes formation of universities-leaders in regions, which can consolidate educational and scientific basis for training of personnel in Russian subjects. During creation of supporting regional universities, the emphasis is made on the fact that they are to become the centers of innovational development, being a part of economy and region's infrastructure at the same time. At that, creation of new engineering and implemental centers and R&D laboratories requires complex realization of projects for creation of high-tech production and necessary conditions for development of interface of regional supporting universities and enterprises. The article views functions and organizational structure of management of technical university; establishes dependence of intensity of organizational transformations on various factors. The authors show a process of formation of matrix organizational structure of technical supporting university with the use of mobile informational and communicational structures, which is formed by placement of horizontal connections on existing linear and functional structure.

Key Words: *supporting universities, technical university, system of management, mobile informational and communicational structures.*

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Educational process is the main process of university (including in created supporting regional universities) and, therefore, it should become a center of formation of management system. For the purpose of reduction of expenses, it is necessary to create effective organizational structure (Lawson, 2015), (Laeven et al., 2015). This ensures high quality of educational services, which increases their competitiveness. University management's work should be oriented at achievement of flexibility and high adaptive possibilities of structure that allow reacting to all fluctuations of demand (Meskon, 2012), (Mintzberg, 2000). Regarding traditional approach to organization of university processes, its non-market orientation is regularly subject to well-reasoned criticism.

Due to many sidedness of its multipurpose functions (Table 1), supporting regional technical university is the most important element of the whole socio-economic system of region.

Table 1. Functions of a technical university in region's system

No.	Functions	Description
1.	Educational	<ul style="list-style-type: none"> – creation and perfection of the system of continuous engineering and technical education not only in region but at the national level; – training and additional training of personnel of higher qualification which reflect needs of region's labor market.
2.	Scientific	<ul style="list-style-type: none"> – applied scientific research at high level; – creation of conditions for sustainable positive dynamics of scientific and technical development with support from leading and formation of new engineering schools and directions; – growth of scientific and innovational activity of students, increase of their contribution into development of main spheres of activities through motivation of manifestation of creative initiative and activity in scientific & educational and innovational & entrepreneurial activities – preparation of highly qualified scientific and research personnel on the basis of development of student science, formation of scientific societies of training and innovational centers for the youth, expansion of directions of training of post-graduates and doctoral program members.
3.	Educating	<ul style="list-style-type: none"> – propaganda of scientific and technical achievements; – formation of ideological environment which reflects goals of country and region.
4.	Economic	<ul style="list-style-type: none"> – attraction of investments for development of functions

		of university in region; – formation of potential possibilities for stable and favorable economic climate in region.
5.	Socio-cultural	– preparation of graduates for professional self-determination on engineering and technical specialties, organization and conduct of training courses in schools, organization of events for formation of targeted professional orientation work; – training of personalities who can create innovational technologies; – socialization of the youth and preservation of traditions of the system of Russian higher engineering education.
6.	Innovational	– interface of developed technologies for production and business of region; – training and additional training of personnel for innovational activities; – development of innovational educational technologies; – formation of innovational infrastructure of region;
7.	Entrepreneurial	– support for technological entrepreneurial environment in university, enterprises, region; – development of student technological entrepreneurship; – increase of patent activity.

Based on analysis of modern directions of development of higher school, it is possible to conclude that successful functioning and development of educational organizations of higher education require such features as flexibility, competitiveness, diversification of resources, and effective system management, including for technical university, on the basis of which a supporting regional university is to be created:

1. Flexibility. In the modern world, technical universities should show flexibility, be dynamics, and adapt to high rates of changes of development and implementation of new equipment and production technologies.

2. Competitiveness. The main components of success and competitiveness of technical university in the regional and national educational environment are: high scientific and educational potential, lecturers-practitioners and lecturers-researchers with strong connections to regional enterprises and spheres, professionally oriented and motivated students, possibility to attract additional resources at the level of region, capability to answer the demands of regional labor market, close cooperation with various business structures of region, etc.

3. Diversification of resources. Modern technical university should strive for diversification of financial sources for increase of consolidated budget, increase of autonomy, achievement of competitiveness, and expansion of specter of the provided services (main and additional educational services, scientific and technical and design developments, technologies, consulting, rent (rental services)

of equipment, specialized premises, laboratories, etc.).

4. Effective system management. It supposes harmonization of scientific, educational, and innovational spheres of activities, including the balance between the program of development of university and its functioning.

The analysis performed within this research allows stating that management systems that are present in modern Russian universities are responsible for economic ineffectiveness of most of educational establishments. These systems were formed during domination of command and administrative system and preserve its peculiar features. Strict structure hinders realization of effective strategies of management, which causes necessity for radical rebuilding of organization which should lead to necessary changes of quality and effectiveness of educational process.

Let us view the ways of realization of the above approaches by the example of technical university, on the basis of which a supporting regional university should be created. Organizational structure of such large state higher educational establishment should be formed on the basis of informational and communicational approach and be client-oriented. At that, one of the most important structural principles is the principle of decentralization. Delegation of authorities should support high level of organizational, economic, and academic effectiveness of university, which will allow it preserving its place and significance in the regional market.

In the viewed case, the application of matrix principle of management will be most effective. Such approach allows particular departments to solve certain managerial and financial issue. Higher management of organization controls strategic development and performs general control.

Matrix structure allows reacting to demand and forecasting its changes. In the universities that use this principle of administration the economic elements include educational and research centers and departments. Managers of these departments (business entities) possess authorities in all directions of activities. In particular, they make decisions regarding provision of educational services and content of scientific research, manage resources, determine HR policy, and are responsible for financing and effectiveness of work. Within their area of responsibility, the managers of departments can solve larger tasks: development and implementation of new products, services, and technologies and entering new markets.

Successful realization of structural and communicational approach to formation of the system of university management requires certain conditions (Simonyan & Knyazeva, 2015):

- business entity should subject to the central administration of university;
- performing main functions, the department acts independently;
- goals and tasks are formulated very clearly;
- informational management of the system should be developed in order to keep connection to the department;

- if necessary, department can use services of administrative apparatus of university or other organizations – on a paid basis;
- there's a defined method for solving conflict situation between various departments and between departments and university;
- goals and tasks of departments should be set in such a way so as to exclude a possibility for direct competition between them.

The above list shows that implementation of matrix principle of management requires overcoming of certain complexities and costs. There are also other obstacles for its general use. Thus, trying to distinguish business entities and transfer corresponding authorities to them, it's possible to face departments' incapability to lead commercial activities in autonomous regime and be responsible for its results. Besides, another problem is determination of necessary number of such independent departments and areas of their responsibility (economic areas). Also, in most cases the issue is potential activity of business entities – in particular, can one department be trusted with several directions of activities or whether it is better to concentrate efforts on one.

Thus, in our opinion, implementation of client-oriented structural and communicational approach into the system of management of technical university, on the basis of which a supporting regional university is to be created, is effective. For this purpose, it is offered to use innovational matrix system of management which is peculiar for the formation of mobile informational and communicational structures (hereinafter – MICOS) (Figure 1).

Of course, under the conditions of transformation and transitional state of organizational structure, the basic departments – chairs, faculties, and newly created innovational functional departments of university – undergo reorganization.

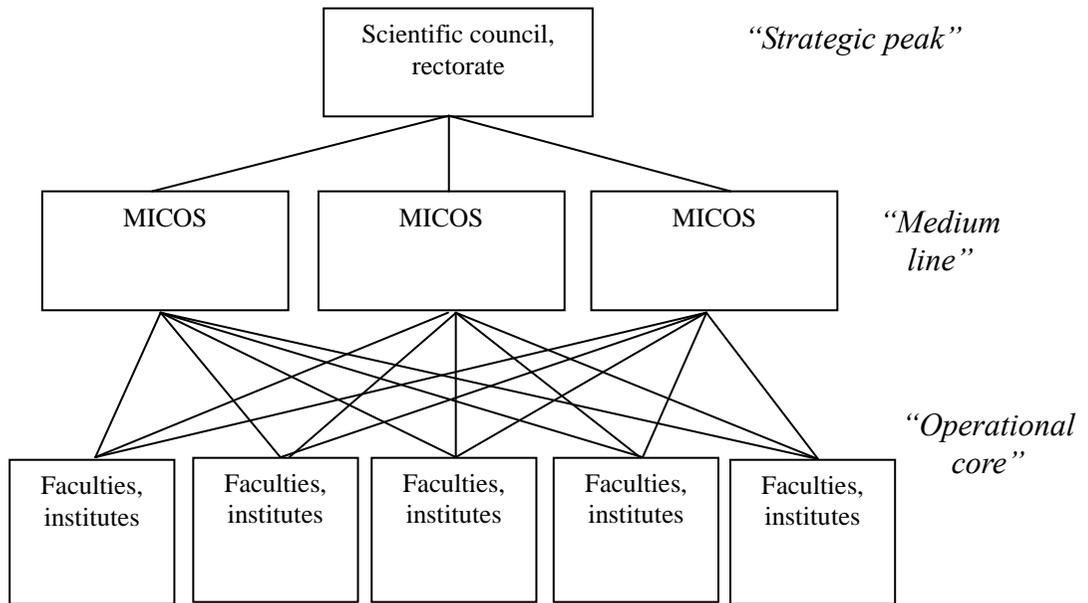


Figure 1. Innovational matrix system of management of technical university, which should be the basis of creation of supporting regional university

During creation of innovational matrix system of management, it is necessary to stick to the following algorithm.

1. Determination of significant and perspective (strategic) direction of training which should become the leading ones in the process of development of university.

2. Each of the given directions becomes a basis for creation of organizational structure of institutes (title of the direction is present in the name of the institute).

3. Other directions of training (“strategic”) are grouped around the others. At that, it is important to observe certain conditions:

- educational standards and educational plans of all levels should correspond to each other;
- possibilities of top-priority directions should be used for creation of conditions for promotion of “non-strategic” directions and specialties in the market;
- transition to two-level training and possible merge of specialties should be performed so as to exclude doubling of courses of bachelor’s program by various faculties;
- scales of MICOS should correspond to the level of the course.

The above transitional model creates conditions for formation and approbation of innovational project groups.

In the above scheme (Figure 1), MICOS is at the level of medium line, but does not coincide with it nor is its element. These structures have their own functions, goals, and principles of use. This, if medium line performs controlling and managing functions, MICOS performs organizational functions. The tasks of MICOS are brought down to analysis of effectiveness of certain direction of activities of technical University. Which structural departments will be involved into their implementation depends on the character of innovations. At that, depending on the level of training, all elements of the system or certain departments of operation center could participate. Activities and management of MICOS are based on matrix principle, while medium line is guided by the linear principle. In the system of management of technical university, MICOS are used for stimulation of active actions of university in the market of educational services. Besides, MICOS are necessary for assimilation of university with international R&D organizations.

In our opinion, formation of such system of management of technical supporting university will ensure high level of competitiveness of higher educational establishment in region, expressed in attractiveness of university in the market of educational services and the “wish” of potential applicants to become students (consumers of educational service) of this very establishment. Effective system of management will allow receiving key factors of success, possessing advantages in socio-economic indicators (quality, price, prestige, PR, forms and methods of study, terms, location, etc.).

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