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# Transformation of educational structures: university as an entrepreneurial organization


Transformação das estruturas educacionais: universidade como organização empreendedora

Transformación de las estructuras educativas: la universidad como organización emprendedora

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**Abstract:** The response of the higher education system to the challenges of today is the emergence and development of new forms of university activity, which more adequately correspond to modern realities. One of these forms is entrepreneurial universities. Thus, this study aims to determine the features of the transformation of universities into entrepreneurial organizations. The article reviews the scientific literature on the problem under study and presents options for defining an entrepreneurial university. Based on an expert survey, the areas of university entrepreneurial activity are determined. The authors indicate the features of entrepreneurial universities and establish and analyze methods for transforming universities in the direction of entrepreneurship. The study led to the conclusion that transformational change in universities is a prerequisite for their effective transformation into entrepreneurial universities.

**Keywords:** Entrepreneurial university, Entrepreneurship, Entrepreneurial activity, Educational model.

**Resumo:** A resposta do sistema de ensino superior aos desafios da atualidade é o surgimento e o desenvolvimento de novas formas de atividade universitária, que correspondam mais adequadamente às realidades modernas. Uma dessas formas são as

universidades empreendedoras. Assim, este estudo tem como objetivo determinar as características da transformação das universidades em organizações empreendedoras. O artigo faz uma revisão da produção científica sobre o problema em estudo e apresenta opções para definir uma universidade empreendedora. Com base na pesquisa de especialistas, são determinadas as áreas de atividade empreendedora universitária. Os autores indicam as características das universidades empreendedoras e estabelecem e analisam métodos para transformar as universidades na direção do empreendedorismo. O estudo levou à conclusão de que a mudança transformacional nas universidades é um pré-requisito para sua transformação efetiva em universidades empreendedoras.

**Palavras-chave:** Universidade empreendedora, Empreendedorismo, Atividade empreendedora, Modelo educacional.

**Resumen:** La respuesta del sistema de educación superior a los desafíos de hoy es el surgimiento y desarrollo de nuevas formas de actividad universitaria, que se correspondan más adecuadamente con las realidades modernas. Una de estas formas son las universidades emprendedoras. Así, este estudio tiene como objetivo determinar las características de la transformación de las universidades en organizaciones emprendedoras. El artículo revisa la literatura científica sobre el problema en estudio y presenta opciones para definir una universidad emprendedora. A partir de una encuesta a expertos, se determinan las áreas de actividad emprendedora universitaria. Los autores señalan las características de las universidades emprendedoras y establecen y analizan métodos para transformar las universidades en la dirección del emprendimiento. El estudio llevó a la conclusión de que el cambio transformacional en las universidades es un requisito previo para su transformación efectiva en universidades emprendedoras.

**Palabras clave:** Universidad emprendedora, Emprendimiento, Actividad emprendedora, Modelo educativo.

## INTRODUCTION

The interaction between educational and business environments is an interesting problem from the point of view of the current state of civilization, characterized by radical changes in its fundamental institutions (Terenteva et al., 2017; Plenkina & Deberdieva, 2017). A striking manifestation of such interaction is the model of an entrepreneurial university, the essence of which is in the implementation of the principles of the business environment in the academic sphere (Beknazarov et al., 2020; Zabolotnikova et al., 2020; Goncharov et al., 2020; Abdulkadirov et al., 2020).

Entrepreneurial universities challenge the traditional, retro-oriented university model with the defining principles of the business environment functioning. Generally speaking, entrepreneurial universities purposefully try to function in the business environment (Biryukov et al., 2020; Dudin et al., 2019, 2020).

According to global statistics, budgetary financial support of state universities by many countries now covers only about 30% of their total expenses (Kalenyuk & Dyachenko, 2016). In such conditions, universities of various types must find the rest of the funds and their sources on their own (Obedkova et al., 2020). This fundamentally changes the principles and foundations of national higher education policy supporting universities funded from the state or local budget. Universities of all types are forced to focus on finding alternative sources of funding and its diversification and attracting additional financial sources (Dudin et al., 2018).

Therefore, “one of the methods to quickly respond to the demands of the economy and industry can be the use of the model of ‘innovative’ or ‘entrepreneurial university’ by several universities and technical colleges with a program close to university programs. Strengthening the position of entrepreneurial universities with a decrease in public funding and significant dependence on the state makes universities look for other methods to stabilize their financial situation” (Sam & van der Sijde, 2014, p. 899).

Entrepreneurial universities, which focus on effective management aimed at successful positioning as central institutions of the knowledge economy and influential players in both national and global labor markets, are today a popular topic of discussion among education experts (Philpott et al., 2011).

## Literature review

Henry Etzkowitz and Burton Clark are considered the authors of the concept of an entrepreneurial university (Bronstein & Reihlen, 2014). H. Etzkowitz first presented the concept of an entrepreneurial university in 1983. According to Etzkowitz (1983), universities consider the possibility to find new sources of funding by obtaining patents for discoveries made as a result of agreements concluded by universities for the sale of knowledge and research carried out under contracts with commercial firms and private business partners.

Let us consider the most frequently used definitions of the concept of an entrepreneurial university, introduced by scholars and specialists in university entrepreneurship (Table 1).

**Table 1**  
Definitions of the concept of an entrepreneurial university.

[illegible]

Research hypothesis: transformational change in universities is a prerequisite for the effective transformation of these universities into entrepreneurial universities.

Research objectives:

1. to identify the areas of university entrepreneurial activity;
2. to indicate the features of an entrepreneurial university;
3. to identify and analyze methods of transformation of universities into entrepreneurial universities.

The article consists of an introduction, literature review, description of research methods, research results and their discussion, and conclusion.

## METHODS

To achieve the study goal, we applied the following research methods: theoretical methods (analysis, synthesis, comparison, generalization) for the review of the scientific literature on the state of the research problem; empirical methods (expert survey); numerical methods (method of mathematical processing of respondents' answers).

The main research method was an online expert survey, during which experts were asked to answer the questions posed to obtain information about the areas of entrepreneurial activity of a university, the features of an entrepreneurial university, and methods of transformation of universities into entrepreneurial universities.

The experts were 20 workers from the administrations of two Russian universities. According to the selection criterion, the experts had been working for at least 8 years in management in educational management.

All participants were informed about the purpose of the survey and knew that the authors of the survey would publish the summary of the results.

The study of the transformation of universities into entrepreneurial universities was carried out in three stages:

the preparatory stage, during which the aim of the study and research hypothesis were formulated and the questions for the experts were developed;

the main stage, which was carried out within 15 days and included the online expert survey;

the final stage, during which the analysis, interpretation, and processing of the results were carried out.

## RESULTS

The experts noted that the following may become the areas of university entrepreneurial activity (Table 2).

**Table 2**  
Areas of university entrepreneurial activity.

No.	Areas of entrepreneurial activity	%*
1	various educational services and funded scientific research on a contractual basis with the subsequent designing of equipment, technologies, methods, techniques, know-how, etc.	90%
2	preparation of teaching materials on a contractual basis (textbooks, manuals, etc.)	87.5%
3	scientific and professional examinations; education of highly qualified operators on a contractual basis (master's degree, doctorate)	85%
4	organization of various international educational, scientific, cultural, athletic, and entertainment programs both at home for foreigners in their country and abroad for citizens of their country	85%
5	organization of children and schoolchildren courses according to the programs of preschool and school education institutions	82.5%
6	organization of various educational, cultural, athletic, recreational, and other events by the staff of universities and leasing university resources to third-party legal entities for similar purposes	80%
7	provision of the following services to applicants and students: vocational guidance, search for apprenticeship and employment assistance; consultation for foreign students on migration issues and search for accommodation and temporary employment; help for applicants and students in finding sources of financial support for their studies	75%
8	creation of additional professional entrepreneurial structures at universities (employment services, legal advisory offices and notaries, translation agencies, travel agencies, psychological assistance services, Internet clubs, etc.)	72.5%

Note: compiled based on the expert survey; \* – percentage of expert references

Based on the expert survey, the following main features of an entrepreneurial university were identified (Table 3).

**Table 3**  
Features of an entrepreneurial university.

No.	Feature	Characteristics	%*
1	Independence from government funding	The university does not need to obtain permission or approval from the government to receive investments. For example, to create new scientific directions, form new branches or commercial structures, etc.	90%
2	Focus on the overall core of governance	There is a strong, decision-making top group that manages the business. The involvement of a wider academic and student community in this process is less important.	90%
3	Employer qualifications in management, especially in finance	The university employs highly qualified professionals and offers a sufficient number of relevant professional development programs to increase their contribution to entrepreneurial development.	87.5%
4	Opportunities for self-formation (change) of the budget	The university is given broad powers to use government funds freely. For example, the university can reallocate funds between workers, IT, and other infrastructures and investments and can also retain annual unused money (for example, to create strategic funds).	85%
5	Externally focused financial contracts	Government and non-government funds and other sources of funding are calculated according to the necessary expenses and business results. This is monitored through regular reports.	85%
6	Collaboration with industry and other leading universities	The university implements foreign opportunities in research, investments in research equipment, visiting, and other useful activities with a network of different individuals and institutions.	82.5%
7	Additional funding from the so-called "cash cover"	Creation of a third stream of income in addition to budgetary financing and industrial investment, for example: conferences halls, management and business schools, other opportunities for lifelong education, shops with university products, educational and scientific literature, etc.	82.5%
8	Optimal focus on a limited range of disciplines and research	University management should not be vested on too diversified activities in areas not related to the main area of university activity (know-how).	80%
9	Maximizing future teaching and research opportunities	The university sees a current situation of the development of the educational, educational services, and scientific research markets, it systematically studies them and accumulates resources to quickly respond to key options for the development or changes of such markets.	77.5%
10	Attractiveness for donations	The university single, its projects, the level of preparation, and the quality of graduates' qualifications attract regular and substantial donations (sponsorship fees).	77.5%
11	Attractive conditions for young scientists	The university hires successful young scientists and creates necessary conditions. This contributes to both attracting more students and carrying out innovative research.	75%
12	Technology transfer	There are well-functioning and structured technology transfer processes.	75%

Note: compiled based on the expert survey; \* – percentage of expert references

According to the experts, universities can transform successfully only with the help of entrepreneurial actions. Five main elements make up the minimum in this process (Table 4).

**Table 4**  
The methods of transformation of universities into entrepreneurial universities.

No.	Methods of transformation	%*
1	Reinforced directing center (management core)	90%
2	Expanded periphery as a development environment	87.5%
3	Funding diversification	85%
4	Constantly stimulated academic environment	85%
5	Integrated entrepreneurship	82.5%

Note: compiled based on the expert survey; \* – percentage of expert references

## DISCUSSION

Let us consider in more detail the methods of transformation of universities into entrepreneurial universities.

*Reinforced directing center (management core).* According to the experts, this center can take various forms, but “it should cover central management groups and academic units, such as departments, etc. The center should combine new management values with traditional academic values” (Expert 12).

*Expanded periphery as a development environment.* Entrepreneurial universities' units, which overcome old university boundaries and connect with organizations and groups in the outside world, growing rapidly. “On the one hand, such units are professional units whose activities are aimed at transferring knowledge, contacting with the industry, developing intellectual property, offering lifelong education, and fundraising and maintaining relations with the graduates. On the other hand, such units (departments) are interdisciplinary research

centers focused on solving scientific problems and carrying out projects” (Expert 9). “Academic units, based on only one domain, will continue to play an important role in the future. Yet, such units cannot carry out all activities (a set of entrepreneurial actions) that universities now need to carry out” (Expert 17). Research centers focused on the external environment have a certain flexibility and are easy to establish and restructure. Such centers are the mediators between the university units and the outside world.

The university infrastructure should rapidly develop, improve, and keep up with the development of the university interaction (trading in results of educational, scientific, and technical activities) with external groups (Rothaermel et al, 2007). Therefore, the evolution of a traditional university into entrepreneurial takes place in this way.

*Funding diversification.* The experts believed that universities need greater financial resources to design their new, change-oriented nature. Analyzing possible methods to diversify the already existing funds of entrepreneurial universities, G.D. Meyer (2011) identifies three sources of income: 1) the main is the financial support from the government (Ministry of Education); 2) state research funds are also important; 3) all other resources are defined as the third source of income. This diversification is essential for entrepreneurial universities. This makes it possible to move forward, making up for the losses, and follow the rule “It is better to have more money than less, but it should be obtained in a legal way” (Expert 19).

Speaking of the third source, the experts believed that it can include:

- other income from the government: the regional or city (municipal) authorities or other ministries (Ministries of Agriculture, Forestry, Ecology, Emergency Situations, Science and Technology, Economic Development, etc.);

- private sources (private organizations), including:

- a) industrial companies with a large number of sectors and important differences between small and large companies;

- b) professional and local (regional, city, municipal) associations and organizations that are interested in providing education to their employees;

- c) philanthropic funds, which can be both small and large;

- income received by the university from its statutory activities; from deposits and investments; from campus (from health centers or university hospitals to bookstores); from students (fees for tuition and services); from university graduates’ funds; from the patented intellectual property of universities and teachers (royalty payments).

D. Audretsch (2014) notes that the third source of income has no limits. This support provided by regional and city authorities, as well as university graduates, grows every year in many universities around the world.

In the process of seeking additional funding from the second and third sources, entrepreneurial universities, in comparison with non-entrepreneurial, are better aware that funding diversification makes them



more mobile and independent of government regulation, standard rules, instructions, etc. (Brennan et al., 2005).

According to researchers, discretionary funds (money that is available to spend on things that are not considered necessary by the educational institution) are of particular importance (Rothaermel et al., 2007).

*Constantly stimulated academic environment.* Creating a strong directing center, expanding the periphery, and diversifying the income, an entrepreneurial university's core still belongs to the traditional academic departments, either focusing on several disciplines or interdisciplinary nature. The proposed changes and innovative steps, according to the experts, can fail in these units of the academic core of the university. "If the main academic departments are opposed to innovation and do not accept it, the life of the university will continue as it used to. To change, units and teachers must one by one become business units and entrepreneurs by creating new programs and measures to make a profit" (Expert 15). The correct perception of management measures and the creation of the honor system in a university's entrepreneurship is especially important in the academic environment (Markuerkiaga et al., 2014).

*Integrated entrepreneurship.* Entrepreneurial universities, just like any company, develop a corporate culture that welcomes, perceives, and supports changes. This new culture can start with even a small institutional idea of change. In the future, this idea can and must develop to create a new innovative university culture on its basis. "The issue of university culture is becoming important because institutional culture helps to cultivate institutional affiliation and a certain reputation" (Expert 9). "In the transformation of universities, the values and ethical beliefs of the educational institution can lead to the development of other important elements" (Expert 6).

Analyzing the appearance and development of entrepreneurial culture in European universities, M. Shattock (2005) notes that the European universities' activities differ from traditional academic activities, such as teaching, research, and cultural services to society. Such issues as the economic component of a university's activities, funding, and methods of making a profit have come to the fore. These issues, faced by almost all universities and colleges in Europe, are fundamentally different from those of classical universities of the past. A significant place in the activities of any university is now occupied by such components of entrepreneurship as consulting, franchising, marketing and management, and student loans. Besides, preference is given to funded research (and research that can be profitably sold); wide internationalization of education and the invitation to study for foreign students; the commercialization of all types of activities of universities, including the use of campuses on a commercial basis, leasing university premises, gyms, and grounds to non-students and non-residents, etc. The scale and volume of commercial services currently provided by universities and colleges depend on their characteristics and location, and the efficiency of university business activities depends on market orientation and technologies.



## CONCLUSION

The formation of the effective interaction between academic and entrepreneurial institutions has become a prerequisite for radical changes in the system of university education and the formation of the global educational space. At the ideological level, entrepreneurial institutions enter the sphere, traditionally belonging to educational institutions in general and structures of university education in particular. Such interaction is considered in Western literature the “second academic revolution” (H. Etzkowitz), which logically continues the first: the combination of education and research.

As a result of such interaction, we examined the model of an entrepreneurial university, the essence of which is in the implementation of the principles of the business environment in the academic sphere.

The main features of an entrepreneurial university, as well as entrepreneurial activity in the field of higher education in general, are the need for the mandatory preservation of the academic and scientific character and a high level of educational services and scientific research; support of high moral and ethical standards of the university environment; preservation of educational and scientific cultural traditions and previous achievements; high image and augmentation of the merits of the university and the entire system of higher education.

The research has confirmed the hypothesis that transformational change in universities is a prerequisite for the effective transformation of these universities into entrepreneurial universities.

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