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ENTREPRENEURIAL UNIVERSITY IN KAZAKHSTAN SOCIAL AND ECONOMIC LANDSCAPE

The problems of entrepreneurial universities formation in the Republic of Kazakhstan are considered in this article, the analysis of the theoretical and methodological base of the research subject is presented, and the current state of Kazakhstan practice is described. The purpose of the work is to consider the real difficulties of transforming Kazakh universities into entrepreneurial ones and to offer solutions for these problems on the basis of a detailed analysis of the progressive practice of creating entrepreneurial universities.

The methodological basis of the work is made up of such general economic methods as the method of dialectical and historical materialism, the method of induction and deduction, methods of statistical analysis, namely the collection and grouping of statistical data.

The results of the study allowed the authors to conclude that the implemented model of the entrepreneurial university should take into account the institutional features of the country and the possibilities of the university. At the same time, an important component of their successful activity is the availability of highly qualified managers and teachers who have an entrepreneurial vision and idea, creative thinking, the pursuit of success, a willingness to take risks without fear of changes.

The scientific and practical value of the work is that the recommendations contained in it will allow improving management approaches in the creation of entrepreneurial universities. Therefore, they will make it possible to take a serious step in the development of the domestic market for science-intensive products and the provision of resources for higher education, and will contribute to the modernization of the entire Kazakh economy.

Key words: entrepreneurial universities, integration, education, business, science, innovations.

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Қазақстанның әлеуметтік-экономикалық ландшафтындағы кәсіпкерлік университеттер

Бұл мақалада Қазақстан Республикасындағы кәсіпкерлік жоғары оқу орындарының қалыптасу мәселелері қарастырылады, зерттеу тақырыбының теориялық және әдіснамалық негіздеріне талдау ұсынылады, қазақстандық іс-тәжірибенің қазіргі жағдайы сипатталады. Жұмыстың мақсаты – қазақстандық жоғары оқу орындарын кәсіпкерлік жоғары оқу орындарына айналдырудың нақты қиындықтарын және кәсіпкерлік жоғары оқу орындарын құрудың үдемелі тәжірибесіне толық талдау негізінде осы мәселелерді шешуге мүмкіндік беретін жолдар ұсыну болып табылады.

Жұмыстың әдіснамалық негізі жалпы экономикалық зерттеу әдістерінен тұрады, атап айтқанда диалектикалық және тарихи материализм әдісі, индукция және дедукция әдісі, статистикалық талдау әдісі, статистикалық деректерді жинау және топтастыру әдістері.

Зерттеу нәтижелері бойынша кәсіпкерлік жоғары оқу орнының енгізілген үлгісі, елдің институционалды ерекшеліктерін және университеттің өзіндік мүмкіндіктерін ескеру қажеті бар екендігіне авторларға қорытынды жасауға мүмкіндік берді. Сонымен қатар, олардың табысты қызметінің маңызды құрамдас бөлігі – кәсіпкерлік көзқарастары мен идеялары, шығармашылық ойлауы, табысқа деген ұмтылысы, өзгерістерден қорықпай тәуекелдерді қабылдауға дайын жоғары білікті менеджерлер мен мұғалімдердің болуы болып табылады.

Жұмыстың ғылыми-практикалық құндылығы оның ішіндегі ұсынымдар кәсіпкерлік жоғары оқу орындарын құрудағы басқару тәсілдерін жетілдіруге мүмкіндік береді. Демек, олар ғылымды қажет ететін өнімдер үшін отандық нарықтың дамуына және жоғары білім беру үшін ресурстардың берілуіне елеулі қадам жасауға мүмкіндік береді және бүкіл Қазақстан экономикасын жаңғыртуға үлес қосады.

Түйін сөздер: кәсіпкерлік университеттер, интеграция, білім беру, бизнес, ғылым, инновациялар.

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Предпринимательские университеты в казахстанском социально-экономическом ландшафте

В данной статье рассмотрены проблемы формирования предпринимательских университетов в Республике Казахстан, представлен анализ теоретико-методологической базы предмета исследования, дана характеристика современного состояния казахстанской практики. Цель работы – рассмотреть настоящие трудности трансформации казахстанских вузов в предпринимательские и на основе детального анализа прогрессивной практики создания предпринимательских университетов предложить пути решения этих проблем.

Методическую базу работы составляют такие общеэкономические методы исследования, как метод диалектического и исторического материализма, метод индукции и дедукции, приемы статистического анализа, а именно сбор и группировка статистических данных.

Результаты проведенного исследования позволили авторам заключить, что внедряемая модель предпринимательского университета должна учитывать институциональные особенности страны и возможности самого вуза. При этом важной составляющей их успешной деятельности является наличие высококвалифицированных менеджеров и преподавателей, имеющих предпринимательское видение и идею, креативное мышление, стремление к успеху, готовность рисковать, не боясь изменений.

Научная и практическая ценность работы заключается в том, что содержащиеся в ней рекомендации позволят усовершенствовать управленческие подходы в создании предпринимательских университетов. Следовательно, позволят сделать серьезный шаг по развитию отечественного рынка наукоемкой продукции и ресурсного обеспечения высшей школы, внесут вклад в модернизацию всей казахстанской экономики.

Ключевые слова: предпринимательские университеты, интеграция, образование, бизнес, наука, инновации.

Introduction

In the modern world, universities play an important role in the development of interstate cooperation in the field of education, science, culture, social and economic relations.

Higher education systems are very sensitive to changes in the external environment. So the development of technologies has affected the institutional functioning of universities. In the new era of developed technologies (mid-twentieth century), universities were forced to change the internal management environment and begin working according to the principles of market relations (Abdrasheva D., 2016).

The growing competition in the market of educational services, the reduction of direct financing from the state budget, sharply raise the problem

of adaptation to new development conditions for modern higher education institutions. The best practices of the world's leading universities show that the key factor in their successful development is entrepreneurial activity, which provides an adequate response to changes in the external environment, contributes to the simultaneous satisfaction of social demands of society and the needs of the market.

In this regard, the definition of the essence of the entrepreneurial university as a form of integration of education, science and business within the national innovation system becomes of special importance (Bunyak N.M., 2016: Pp.144-147).

Materials and methods. Methods of this problems study of the formation of entrepreneurial universities were:

– method of dialectical and historical materialism that helps to penetrate the essence of the contradictions that gave rise to economic phenomena and the processes of entrepreneurship in the system of higher education that determine the nature of their development;

– systematic method that allows to consider the problem of the formation of entrepreneurial universities in the interrelation of its individual elements as a single system (Shchedrovitsky G.P., 1995: 800 p.).

– method of induction, which made it possible to make conclusions about entrepreneurial universities on the basis of research on such individual elements as entrepreneurial culture and the system of higher education;

– method of deduction, with the help of which new knowledge (conclusions) have been obtained that the entrepreneurial university possesses the characteristic inherent in the whole class of entrepreneurship;

– quantitative and qualitative analysis, which allowed to make primary and secondary processing of data about entrepreneurial universities by applying computational methods, as well as classification, typology, systematization, periodization, casuistry, etc. (Yadov VA, 1991: Pp. 14-31)

Literature review

The theory of the "triple helix", created at the beginning of the XXI century by G. Itskovich and L. Leidesdorf, is based on the synthesis of a number of sociological theories using analogies from biology and physics. As applied to innovative development, the "triple helix" model describes the interaction of three institutions: science (or university) – state – business by the type of cohesion of spiral DNA structures, which allows to institutions to adopt and retain some characteristics of each other. Its main characteristics are:

1) in a society, which based on scientific knowledge, it is characteristic to strengthen the role of universities in interaction with industry and government;

2) three institutes (university-state-business) seek cooperation, while the innovative component is generated from this interaction, and not due to the initiative of the state;

3) in addition to traditional functions, each of the three institutions partially assumes the functions of other institutional spheres, and the ability to perform non-traditional functions is a source of innovation

In practice, this is reflected in the fact that universities, by engaging in education and research, contribute to the development of the economy through the creation of new companies in university incubators, business partly provides educational services, and the state acts as a public entrepreneur and venture investor in addition to its traditional legislative and regulatory role. In this model, the leading role is assigned to universities, which turn into entrepreneurial universities or industrial-type universities, applying knowledge in practice and developing new educational disciplines (Itskowitz G., 2011).

The term *"entrepreneurial university"* is very often found in the literature, however, there is no generally established approach (Kalar V., 2015: P.1-11), (Styhre A., 2010: Pp.107-120), (Maribel G., 2016: Pp.551-563). In the works of many authors it is possible to find this term, but it was widely used in the works of B.R. Clark in the 90's. The scientist on the basis of the analysis of ten-year experience of transformation of five European universities has proved that the entrepreneurial university actively strives to innovations in its work. Its important feature is the adoption of risks in the development of new practices, the result of which is unclear. He wants to significantly change the nature of the organization's activities in order to be in a better position in the future (Clark B., 1998).

According to the American researcher J. Ropke, the entrepreneurial university meets the following requirements:

must demonstrate entrepreneurial behavior as an organization;

teachers, students, university staff should be entrepreneurs;

the interaction between the university and the environment should lead to a "structural interfacing" between the university and the region (Ropke J., 1998).

Scientists believe that universities and companies are natural partners in developed countries, where firms look for external sources of knowledge to supplement their human resources and R & D labs.

At present, the creation of new products and services requires sources of creativity beyond the boundaries of companies, including cooperation with customers, suppliers, research institutes and even competing companies (Chesbrough H.W., 2006), (Stal E., 2016).

At the same time, cooperation between universities and companies can have such basic forms, as shown in Table 1.

Table 1 – University–industry relations.

Research partnerships	Inter-organizational arrangements for conducting collaborative R&D
Research services	Activities commissioned by companies, including contract research and consulting
Academic entrepreneurship	Development and commercial exploitation of technologies by academic scientists through the creation of firms (alone or with partners)
Human resources transfer	Multi-context learning mechanisms such as training of companies' employees at the university; postgraduate activities in firms; graduate trainees; and temporary transfer of scientists to companies
Informal interaction	Formation of social relationships and networks at conferences, etc.
Commercialization of property rights	Licensing of university-generated intellectual property (patents) to firms
Scientific publications	Use of codified scientific knowledge within industry
Source: Perkmann M., 2007: Pp. 259-280.	

In all countries of the world, governments are trying to avoid the increasing burden of direct financing of the growing system of higher education. So, in the US, even for public universities, the amount of funding by the government does not exceed 30% of the total budgets of universities. In these conditions, educational institutions are forced to turn, in fact, into entrepreneurial structures, independently seeking funds for existence and development. At the same time, high potential and efficiency as a unit of innovation infrastructure, acquires such a new element as the Proof of Concept Center (POCC) (Bradley S., 2016: Pp.2-24). A key feature of POCC is the availability of its own fund for financing innovative projects. The POCC, created on the basis of university resources, is better equipped for the benefit of universities and encourages the growth of an innovative network at the university, and forms an entrepreneurial culture (Baydali S., 2015: Pp.240 - 245).

In the article "Entrepreneurial University: Strategy for Institutional Development" P.Shultse points out two ways of realizing the entrepreneurial function of the university.

The first direction is connected with the training of future entrepreneurs, people which are ready to found and take responsibility for their own business.

The second direction is the entrepreneurial activity of the university. Creation of business incubators, technology parks, subsidiaries, etc. The university should involve students and graduates in entrepreneurship, providing them with not only information and consulting, but also resource support (Schulte P., 2006: Pp. 187-193).

The following figures speak eloquently about the significance of this activity. At the University of Oxford, in particular, there are about 300 firms with a total annual turnover of $4 billion, the university receives about $1 billion from it.

At Harvard University, the resource capital (endowment), the capital of the university used for its entrepreneurial activities is $18 billion, at the University of George Washington - about 500 million, and at 280 universities and colleges it is more than $100 million. This is not just about entrepreneurship and the creation of new enterprises. Relying on their competitive advantages, universities create primarily science-based, innovative industries (Melikhov V.Yu, 2009: Pp.42-45).

Results and discussion.

The idea of integrating education, science and production is not new. In the twentieth century, the

USSR had accumulated extensive experience in integrating education and production (the "plant-university" system), as well as education and science (the "phys-tech" system). A retrospective analysis of the features of education integration, science and production allows us to conclude that various organizational forms of this integration have developed in Kazakhstan: science cities, technoparks, departments at enterprises, integrated educational and scientific educational complexes such as national and research universities, university complexes etc. The development of a new category of universities - research universities - is also carried out on the basis of real integration of scientific and educational processes (Ashikhmina Y.G., 2010: Pp.193-203).

According to Kazakh scientists, Kazakhstan often buys technology, not knowledge. But two years later this technology is becoming obsolete, and it is necessary to again buy a new technology, but at a more expensive price. Here the role of innovation management is very important. The three components of the economy - universities, business and the state - must work in one bundle and ensure the introduction of innovation and economic growth, described by the generally known "triple spiral". For the development of industry abroad, the research potential of universities is actively used. Students, teachers and employees of the entrepreneurial university are themselves entrepreneurs, participating in the formation of new industries, companies. Graduates who have gone into real business do not tear their contacts with their entrepreneurial universities, but, on the contrary, develop and strengthen them. As a result, universities are able to accumulate funds, directing them primarily to scientific activity (Yuzhaninova K., 2014).

Kazakhstan has all opportunities to become the center of entrepreneurial and innovative activity in Central Asia. For example, due to the "Damu" Entrepreneurship Development Fund, a program "Business Advisor" was created, according to which engineers were sent for training abroad. These specialists, after training, returned with a new vision, with a developed system of values. Also, there is a tendency for close interaction between education and science by creating a database for research practice in graduate and doctoral studies, as well as the allocation of block grants for education from further employment in research centers and universities. For example, all specified directions of cooperation between education and industry are present in the work of the Employers Council of the Higher School of Economics and Business at KazNU named after al-Farabi (Turginbayeva A.N., 2017: Pp.83-86).

In Kazakhstan, according to statistics, the sector of higher professional education owns third of all organizations, engaged in scientific research and experimental-construction works (SREC) (26.9% in 2016) (Table 2).

Table 2 – Number of organizations (enterprises) that carried out SREC in the RK and their costs in 2012-2016

Indicators	2012 y.	2013 y.	2014 y.	2015 y.	2016 y.	Specific weight 2016, %
Internal costs for scientific research and experimental-construction works (further - SREC), mln. tenge	51 253,1	61 672,7	66 347,6	69 302,9	66 600,1	
Number of organizations (enterprises) that carried out SREC, units	345	341	392	390	383	100
including:						
government sector	69	78	101	94	100	26,1
sector of higher professional education	121	112	105	103	103	26,9
business sector	105	110	149	154	149	38,9
non-profit sector	50	41	37	39	31	8,1
Note: Compiled by the authors on the basis of the source (Agency of the Republic of Kazakhstan on Statistics, 2017)						

Kazakh companies are constantly complaining that universities give «out» bad specialists. To solve this problem, it would not be so difficult for the company itself to come to universities with a proposal to work together. It is possible to provide assistance in terms of teaching, in terms of equipping laboratories, etc., thus, at least in such way companies can participate in the life of universities, and future university graduates will be able to join business in time (Developing Entrepreneurial Graduates, 2008). Based on this interaction, business gets an incentive to develop high-tech production using the potential of Kazakhstan's higher school, using the creative spirit of student youth, enterprises receive qualified specialists of a new formation, science receives professional personals, orders of enterprises and incentives for further development, and universities, in turn, - receive benefits from science and production (Mayer G.V., 2008: Pp.166-167).

Noting the effectiveness of scientific activity of Kazakhstan university scientists, it is possible to highlight the positive dynamics, as evidenced by the international search platform Web of Science, which combines abstract databases of publications in scientific journals and patents (table 3).

Table 3 – Top 10 of Kazakhstan universities on scientific achievements

Universities	Number of articles on the Web of Science platform
Al-Farabi Kazakh National University	2082
Nazarbayev University	971
Eurasian National University	952
The Karaganda State University academician E.A Buketov	334
Satbayev University	322
KBTU	236
M.Auezov South Kazakhstan State University	207
KazNP University	166
KST University	137
KazNM University	121
Source : Ibrayeva A.., 2017	

However, it is not enough to have a strong science for an entrepreneurial university. According to experts, many barriers hamper the development of entrepreneurial functions in modern higher education institutions of the post-Soviet space:

• Orientation of the majority of universities to training, rather than to scientific research, which is mainly occupied by the academic sector;

• high level of dependence on the state (especially state universities) when choosing the directions of activity;

• underdevelopment of the innovation educational business environment of universities as the basis for the formation of entrepreneurial competencies among its students;

• lack of systemic links between universities and business and society;

• Low level of entrepreneurial culture and lack of entrepreneurial experience among teachers (Bunyak N.M., 2016: Pp.144-147).

The study of the United Kingdom's organization - NESTA (The National Endowment for Science, Technology and the Arts), NCGE (The National Council for Graduate Entrepreneurship) and CIHE (The Council for Industry and Higher Education) was presented in the «Development of Entrepreneurship in Graduates. Entrepreneurship in the center of higher education «, where the main directions were mentioned that accompany the formation of entrepreneurial culture in universities, which must also be developed in Kazakhstan:

1. Creating an institutional environment that involves a clear understanding of the goals and outcomes, as well as creating the necessary

conditions for entrepreneurship education within the educational institution.

2. Involvement and participation of internal and external stakeholders, namely authorities of all levels, sponsors, employers, management and staff of the university.

3. Development and improvement of teaching methods and studying entrepreneurship, which requires the knowledge transfer model to transition to an experimental model of learning (Developing Entrepreneurial Graduates, 2008).

It should be noted that there is no universal model of entrepreneurial university, as well as ways of its formation. At the same time, regardless of how entrepreneurial activity manifests itself, entrepreneurial universities combine teaching, research and entrepreneurial activities, receive profit from it, and also play an important role in innovation processes in the country. On the one hand, they train specialists for different fields of activity with innovative thinking, and on the other hand, the production of new knowledge and their commercialization. Thus, Kazakh researchers tried to single out the country's entrepreneurial universities by the presence of such important structural elements as a business incubator, an entrepreneurial course, a mentoring program (Table 4).

Table 4 – Entrepreneurial Universities of Kazakhstan

Universities	Business incubator	Entrepreneurial course	Mentoring program
KIMEP University			
Al-Farabi Kazakh National University			
NARXOZ University			
KBTU			
Karaganda Economic University			
Kazakh-Russian International University, Aktobe			
AlmaU			
Source: (Yuzhaninova K., 2014).			

Implementing the model of the entrepreneurial university, it is necessary to take into account all its pros and cons, as well as the institutional features of the country and the possibilities of the university itself. At the same time, an important component of their successful activity is the availability of highly qualified managers, as well as teachers who have an entrepreneurial vision, entrepreneurial idea, creative thinking, the desire for success, the willingness to take risks, the absence of fear of changes. The transformation of the university into an entrepreneurial organization, taking into account existing obstacles along this path, should provide:

formation of entrepreneurial corporate culture among students and teachers;

introduction of an adaptive management structure and reorganization of the organizational structure, attracting effective managers to this process;

orientation to constant changes in the external business environment and adaptation to them;

Creation of an effective system of motivation and stimulation of teachers for scientific activities, commercialization of the results of their own research;

strengthening of relationships with business, society, potential investors;

coordination of university development goals with the needs of its external and internal stakeholders;

development of entrepreneurial infrastructure in universities with the aim of developing entrepreneurial skills among students; in particular, the creation of development centers, technology parks, student business incubators, which in turn will improve the quality of graduate education through the use of modern forms of education, the creation of small innovative enterprises, etc. (Bunyak N.M., 2016)

Entrepreneurial activity of universities is aimed not only to obtaining financial results, but also carries the most important socio-economic component – the development and implementation of innovations. Institutional basis of this activity are university business incubators and technoparks. Thus, business incubators and technoparks for the modern university training system are strategic success factors (Lazarev V.S., 2005).

Summary and Conclusions.

For the development of these organizational forms of support for the transfer of technologies that allow for to make their effective commercialization, increasing the competitiveness of universities and leadership in the development of higher professional education, it is necessary:

to make changes in the taxation of institutions of higher professional education and enterprises of small innovative business. These measures (reduction of profit tax, import customs duties on high-tech equipment for innovative research and productions) should increase the attractiveness of innovative business for universities and small businesses that they create;

implement a program of management training for innovative business and business incubators;

compile and introduce new venture financing programs for innovative business;

Develop and implement a mechanism for compensating of parts of the rate on commercial bank loans for university-created innovative enterprises (Stitsuk R.Yu., 2013).

The implementation of the proposed measures will make it possible to take a serious step towards the development of the domestic market for high technology products and resource support for higher education, and will contribute to the modernization of the entire Kazakh economy. The formation of a civilized market presupposes the creation of an adequate social base for it - a support for civilized producers: priority support for relevant activities and professions; development of those sectors of the market that benefit society, rather than deplete its non-renewable raw materials. Therefore, the development of entrepreneurial activities of universities is necessary not only to adapt science to the market, but also to give the domestic market a civilized species (Melikhov V. Yu., 2009: Pp.42-45).

In the modern world with the rapid development of technology and information, we need a confident platform for self-improvement. And entrepreneurial universities are a necessary base for the effective development of our economy and our future.

To begin with, we need to build an educational base, and only then proceed to the development of technology parks (Nakagawa K., 2017), (Rasmussen E., 2014: Pp. 92-106). It is in entrepreneurial universities both new technologies are being created and scientific research is being carried out. And although universities are the center of this process, it shouldn't be forgotten about the role of the state and the enterprise (Abreu M., 2016: Pp.695-717). If these three main elements become a single whole, then Kazakhstan has all chances for innovative development.

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