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The Relationship between University, Business and Government in Training for Mining and Geological Enterprises of the Region

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***Abstract*—Examined the questions about training for regional mining and geological enterprises that based on conception of the "Triple Helix" model. The average annual dynamics of employment number and personnel requirements by types of economic activity "Mining operations" has shown among the regions of the Far Eastern Federal District during the period 2010-2014. The analysis of training in professional educational institutions for the mining industry for regions of the Far Eastern Federal District including the North-Eastern Federal University was realized. The authors offer the conceptual model of training based on effective interaction between members of the triad which at an optimal combination of scientific and educational and production processes, priority policy of the regional government in promoting education and science development will improve the quality of training of highly qualified specialists that meet the requirements of regional economy.**

Keywords—mining and geological industry, analysis, requirement, training infrastructure, triple helix, model

I. INTRODUCTION

With the advent of the market economy society has faced a number of problems in the field of human resources. For example, according to the work of N. Petrova and others [1] are marked out the following most urgent of them: supersaturated labor market by specialists in the same professional field and an acute shortage of others, immigration of highly qualified personnel, reducing the quality of educational services, the lack of connection between institutions of higher professional education (HPE) and real processes on the labor market, employment of graduates of higher professional education (HPE) not on the specialty received in educational institution.

In this connection, the issues of improving professional personnel training for branches of economy including the mining and geological industry, hasn't lost its relevance today. In this regard one of the most important aspects of improving training is participation in educational process of consumers of professional personnel and enforcement authorities, as well as necessity to study the issues of their relationship to improve the quality of the graduates. The authors consider that the conception of the "Triple Helix" model could be accepted as one of the modern approaches, based on which the proposed conceptual model of effective relationship between participants of the triad (University-business-government).

In the following section the analysis of requirement and infrastructure of professional training in regions of the Far Eastern Federal District is made.

II. THE ANALYSIS OF REQUIREMENT AND TRAINING FOR BRANCHES OF ECONOMY

As is well known, socio-economic development of the region generally depends on the production potential of the basic branches of economy among which the most important is the mining and geological industry. In view of the production specifics this industry demands constant updating in personnel structure of engineering specialties of a different profile. Fig. 1 shows the average annual dynamics of employment number by types of economic activity "Mining operations" among the regions of the Far Eastern Federal District (FEFD) during the period 2010-2014.

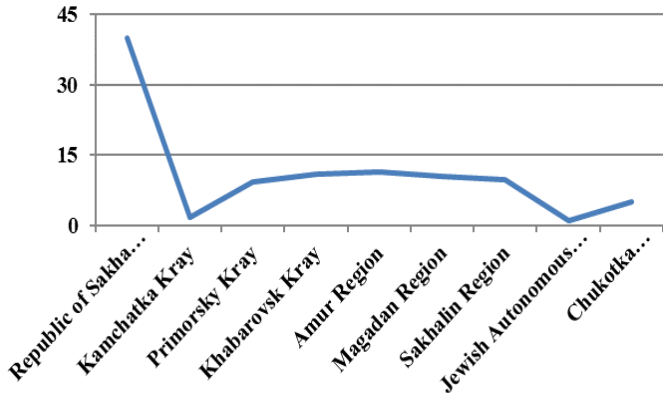

Fig. 1. Average number of employment by types of economic activity "Mining operations" in the regions of the Far Eastern Federal District (FEFD) for 2010-2014, ths ppl

Data analysis of the Federal State Statistics Service (Rosstat) shows that the leading positions are taken: The Republic of Sakha (Yakutia) (about 45%), Khabarovsk Kray (from 11.6% to 15.0%), the Sakhalin region (from 11.2% to 13.3%) and Primorsky Kray (from 9.9% to 13.2%).

The needs of organizations in employees to fill vacancies by types of economic activity "mining operations" according to territorial authority of Federal State Statistics Service in the Republic of Sakha (Yakutia) for the last 3 years ranges from 400 to 1068 peoples.

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The number of educational institutions of primary and secondary professional education, higher professional education that are carrying out training for the branches of economy among the regions of the Far Eastern Federal District, presented in Table 1.

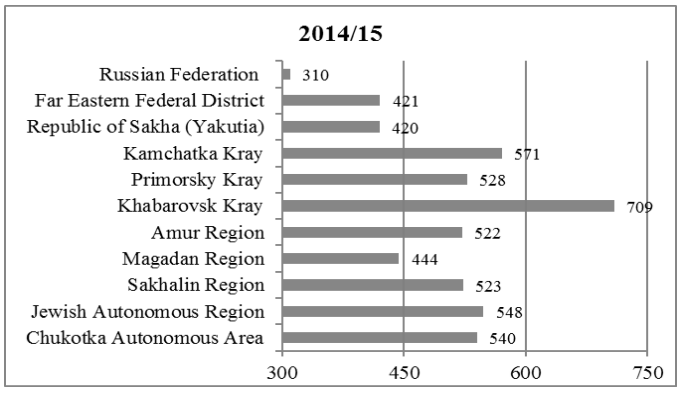
Table I. The Total Number of Educational Institutions of Primary And Secondary Professional Education, Higher Professional Education

Region	2005/ 2006	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015
Far Eastern Federal District	554	461	448	440	391	331
Republic of Sakha (Yakutia)	106	97	92	86	79	75
Kamchatka Kray	37	34	29	28	22	26
Primorsky Kray	144	114	130	123	90	85
Khabarovsk Kray	115	89	84	75	74	69
Amur Region	72	48	37	48	36	27
Magadan Region	22	21	19	20	19	19
Sakhalin Region	37	37	35	38	28	20
Jewish Autonomous Region	24	17	17	17	14	11
Chukotka Autonomous Area	4	4	5	4	6	5

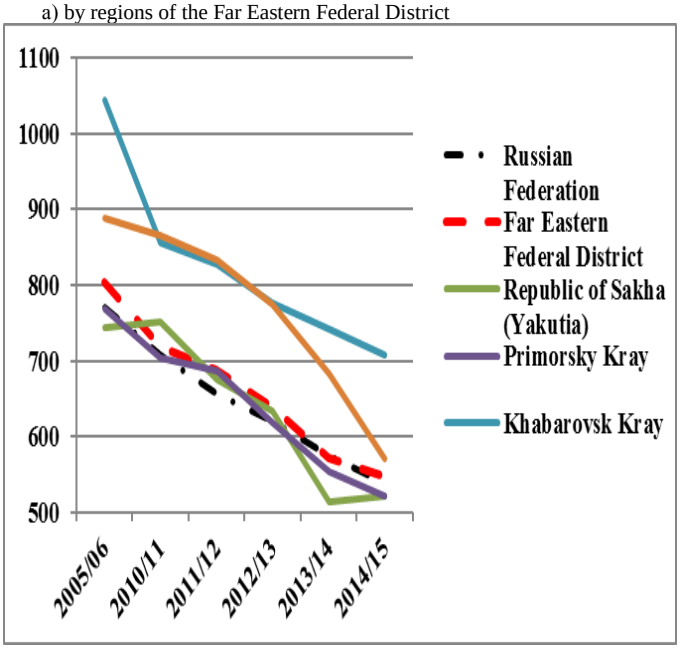
Source: The regions of Russia, Socio-economic indicators, Statistical collection, Rosstat: Moscow 2015 [2].

The table 1 shows the total number of educational institutions among the Far Eastern Federal District for the period from 2005/2006 to 2014/2015 academic years was significantly reduced and makes respectively of 554 and 331 units. If consider by regions of the Far Eastern Federal District for academic year 2014/2015, the leading positions are taken by Primorsky Kray (85 units), Republic of Sakha (Yakutia) (75 units) and Khabarovsk Kray (69 units).

Figure 2 shows distribution of the total number of students in professional educational institutions per 10.000 populations, persons for academic year 2014/2015 by regions of the Far Eastern Federal District (a) and for the period from 2005 to 2015 (b).



a) by regions of the Far Eastern Federal District



b) for the period from 2005 to 2015

Fig. 2. Distribution of the total number of students in professional educational institutions per 10.000 populations, ppl

Currently, two large universities function on the territory of the Russian Far East: Far Eastern Federal University (FEFU) in Vladivostok and M.K. Ammosov North-Eastern Federal University (NEFU) in Yakutsk which are called to prepare highly qualified specialists for branches of real sector of the Far Eastern Federal District economy.

NEFU trains personnel on specialties and directions of mining and geological branch are carried out in various structural divisions: mining institute, faculty of geology and survey, technical institute (Nerungry), polytechnic institute (Mirny) and Chukotka branch (Anadyr) [3].

Training of specialists of an average link for mining industry are carried out by institutions of Ministry of professional education, training and placing of personnel of the Republic of Sakha (Yakutia): Autonomous institution of the Republic of Sakha (Yakutia) “Aldan Polytechnic College” (Aldan); State budgetary educational institution “Mining and geological college” (Khandyga, Tomponsky district); Autonomous institution “Mirny regional technical college” (Mirny); State budgetary educational institution “Southern Yakut technological college” (Nerungry); State budgetary educational institution “Nyurbinsk college” (Nyurba) and “Vocational school № 34” (Ust-Nera, Oymyakonsky District).

Graduates of the republic educational institutions work in the leading mining and exploration enterprises of the Northeast of Russia: OJSC ALROSA, OJSC Surgutneftegas, OJSC Almazy Anabara, Guggp Rs (Ya) “Yakutskgeologiya”, JSC Yaktskgeofizika, etc. The mining enterprises of the Republic of Sakha (Yakutia) in turn are directly involved in training from implementation of the order, practical training and finishing with employment.

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In turn, a stable socio-economic development of the Far Eastern Federal District is generally connected with markets of the Asia-Pacific Region (APR), particularly Northeast Asia (NEA) of their consumer capacity and different types of demand in commodity output [4].

III. METHODOLOGY OF RELATIONSHIPS BETWEEN TRAINING PARTICIPANTS

According to N. Golovko and others [5], modern society is required from university's graduate not only to be a professional in any field of knowledge but also be prepared to actively participate in economic development. Universities in the knowledge economy from education (model of educational university) transfer to research (model of research university) and then inevitably pass to scientific entrepreneurship (model of entrepreneurial university). In this regard, for effective implementation of the tools of government policy is necessary to form a new model of relationships between the triad "government – science - business" in the innovation system on principles of the "Triple Helix" model. According to H. Etzkowits [6] the modern university is not just educational, but also researches and entrepreneurial organization. Companies fulfill partly the role of universities, creating collaborative partnerships with science, and governments support a spiral configuration, constantly act as a venture capitalist. The theory of the triple helix often describes in the works of other authors [7-10]. In process [5] the entrepreneurial university is considered as one of the basic elements of the Triple helix theory. Marked that a high-tech business, government as a venture capitalist, public opinion etc. – all of this make university do changes, denying, for example, the idea that diversification and value appreciation of knowledge production could lead to decline importance of university and the fact that in modern society from university's graduate is required not only to be a professional in any field of knowledge but also be prepared to actively participate in economic development.

In our opinion, a conceptual basis of improving training for economy branches, including mining and geological enterprises is the steady monitoring of the labor market for timely adjustment of parameters in requirement of specialists in one direction or another of perspective demand on consumer's market, organizational and structural scheme which provides active participation in educational process of members of the triad, including executive state government bodies and business community.

Consequently, the authors propose a conceptual model of interaction between participants of the triad on the basis of "The Triple Helix" Concept to improve training of qualified personnel (Fig. 3).

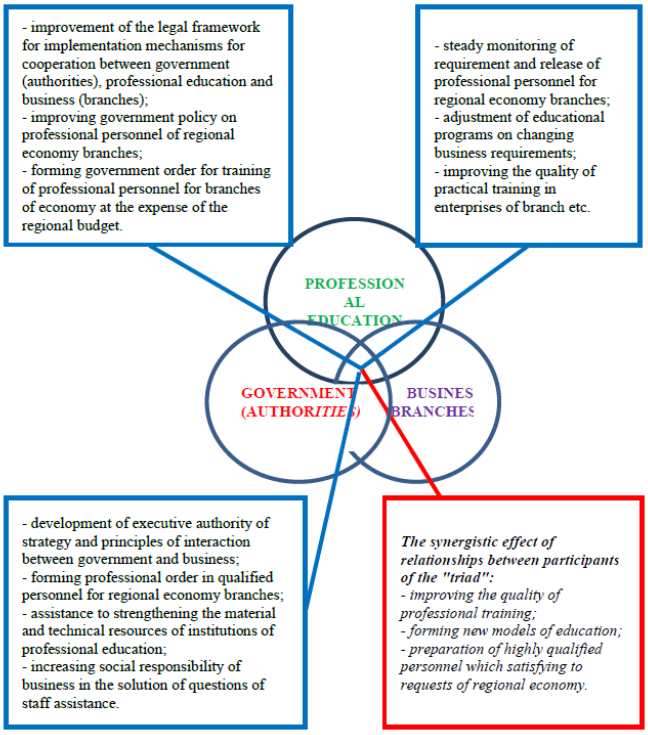

Fig. 3. Conceptual model of interaction between participants of the triad on the basis of The Triple Helix to improve training of qualified personnel

IV. CONCLUSION

Thus, on the basis of effective cooperation between educational institutions and enterprises of branches of economy and active participation of executive authority could prepare a comprehensively developed specialist which will meet modern requirements. For implementation of such approach proposes a conceptual model of interaction between participants of the triad to improve training of qualified personnel, the main advantage of which, as the authors note, is the possibility to use of economic-mathematical methods of numerical calculation for monitoring and analysis the requirement of branches of economy (business) in qualified personnel and specialists, graduates from institutions of professional education and also adjustment of educational programs on the basis of relevant statistical and other indicators which shows requirement of specialists in enterprises of the real economy sector [11].

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