

UDC 330

**THEORETICAL BASIS OF MATCHING WORKERS' COMPETENCE WITH TECHNICAL AND TECHNOLOGICAL WORKPLACE PARAMETERS****KIRYL KRYVITSKI, INGA ZENKOVA**  
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*The article systematizes theoretical foundations of matching competencies with technical and technological workplace parameters. The author's concept of the harmonization of higher (vocational) education and employment in the labor market is presented. The calculation of gross regional product due to unsustainable employees' education is shown. The conclusion of imperfect institutional structure of the labor market is made. The insufficient coordination between elements "ability, competence – technology", "technical and technological workplace parameters" in the labor market is emphasized.*

The forefront of national strategy for sustainable socio-economic development of the Republic of Belarus to 2020 is to bring the national education system to the level corresponding to the world standards. The problem of advanced planning and creating relevant competencies is topical today and it will be updated in connection with the companies' desire to receive more technological rent from innovation processes in the country.

Without any doubt, the competitiveness of the national economy depends on a country's ability to export high-tech production. It should be mentioned that the main indicators of innovation activities are: "employment in high-tech industries", "export of high-tech production", "employment in the branches of high and medium level of technological development" and others. According to the theoretical approach of Russian researcher K.R. Gonchar the indicators of company and economy competitiveness are as follows: R&D costs for training employees in large companies, the purchase of software packages, productivity growth.

The role of the university in the chain "education market – competitiveness" is becoming clear. Institution is primarily engaged in the forming process of academic skills and competencies for professionals, but also acts as the main long-term investor of fundamental research. K.R. Gonchar's theoretical approach is valuable for our research with its explanation of dominant role and place of fundamental research in the innovation process of the national economy.

The studies of theoretical foundations of medium-and long-term planning skills, abilities, technological, scientific competencies of companies, universities, and employment centers are still relevant. In this regard, the problems of coordinated development of the labor market and educational services, as well as the study and development of methods for increasing the coherence of these markets become topical issues.

Theoretical foundations for the doctrine of harmonization of labor market and educational services were laid by representatives of the classical school in economics. Later the theory of coordinated development of the labor market and the education market appeared in a variety of works by such distinguished scientists and economists as R. Ehrenberg, J. Commons, T. Veblen, J.K. Galbraith, J. Tinbergen, E. Domar, R. Harrod.

Theoretical approaches to harmonize the labor market and educational services have been developed by the following scientists: E.F. Denison, G. Psacharopoulos, M.J. Bowman, T. Schultz, M. Sattinger, Gary B. Hansen, W. Edwards Deming, Fried Foulkes, Ann Whitman, as well as Russian scientists Y.G. Odegov, V.E. Gimpelson, S. Roschin, R.I. Kapelyushnikov, V.S. Bulanov, N.A. Volgin, P.E. Schlender, A.G. Korovkin, A.L. Lukyanova.

Significant contribution to the development of problems matching labor market and educational services has been made by such Belarusian scientists as A.N. Tur, L.E. Tikhonova, V.A. Kulazhenko, V.G. Loktev, Z.M. Yuk, E.V. Vankevich, A.P. Morova, G.N. Sokolova, A. Bondar, L. Borovik, M.P. Piluy, S. Tkachenko, M.N. Bazylev and others.

We are inclined to share the theoretical approach of M. Sattinger, in particular, assignment theory, where the author makes an accent on the matching of technological competence and technological workplace parameters.

This approach sets the theme of scientific conversation about whether investment in education is returned in the current situation "ahead of technology education" or "education ahead of technology" perspective affects employment and effective course for question on the cost of labor productivity of efficient workplace.

Also there is a valuable consideration of various elements of the relative system "competence in education-technical and technological parameters of workplaces". In economics, there are situations where technology outperforms market education or education market goes ahead of technology.

We believe that the basic set of skills, abilities and competences, midterm oriented during its creation, which takes into account information on the geography of created vacancies, time and a substantial component of the occupation characteristics, solves the problem of rapid employment of workers under dismissal. It is enough to match the worker's skills, professional experience with missing skills and abilities that will quickly enable to include the unemployed in retraining programs. This contributes to the labor supply structure harmonization with the demand and sustainable development of the national labor market.

We consider it important to identify production and technological parameters of jobs, not only at the stage of imbedding the equipment, technology but at the stage of creating a new idea of hardware technology. There is possible parallel harmonization between programs of educational institutions and technical and technological parameters of workplaces.

In our opinion, the concept of the harmonization of higher (and vocational) education and employment in the labor market should take into account:

1. Forming lists of promising areas with demand for labor at national level, regional, industry, enterprise levels both in urban and rural areas.

2. Drawing up a single paper on the structure of the occupation labor supply and demand, corrected according to the changes in social-economic behavior of the country.

3. Revision of the system of interaction between enterprises, management on labor and employment, educational institutions in order to reach a new level of their relationship.

3.1. The company plans technological parameters of the workplace with parallel commissioning of equipment and technology and provides information about required practical skills to the training institutions and information (with a breakdown by age and gender and skill structure) on prospective jobs in departments of labor, employment and social protection.

3.2. Universities and colleges develop training programs based on specialization, production specifics and information about the technological parameters of jobs.

3.3. Department of labor, employment and social protection accumulates information about the occupation structure of jobs (today and in the future) and places it on its official website.

3.4. Entrant acquainted with this kind of information, sees at what geographical point, perspective, field of labor application his skills are needed.

4. Methods of determining the economically reasonable number of employees at micro level:

– enterprises planning the new equipment, improvement of existing equipment with detailed data;  
– detailed structural and functional analysis of the workplace in order to identify its production and process parameters;

– drawing up lists of prospective qualifications and specialties necessary for planned service of the created equipment, working area;

– providing a list of qualifications and specialties to the highest levels of government and horizontally in the sphere.

5. Calculation of loss in gross regional product connected with poor training. At the heart of this authoring there is an assumption that identifying the proportion of unemployed graduates in different fields allows to evaluate a potential shortfall of gross regional product and share of irrationally trained manpower for a certain date. Stages of building a model:

Step 1: Calculation of the excessive training (1):

$$R_{exc.} = 1 - \frac{N_{e.potential}}{N_e} \quad (1)$$

where:  $R_{exc.}$  – excessive training ratio;  $N_{e.potential}$  – regional potential workers number;  $N_e$  – number of people employed in regional economy.

$$N_{e.potential} = N_e + N_{undistributed} \quad (2)$$

where  $N_{undistributed}$  – the number of undistributed graduates.

Step 2: Calculation of losses of GNP (gross national product):

$$\Delta GNP = GNP_0 \cdot R_{exc.} \cdot m \quad (3)$$

where  $\Delta GNP$  – GNP losses connected with irrational training;  $GNP_0$  – gross national product in comparable prices;  $R_{exc.}$  – excessive training ratio;  $m$  – time factor, which is ratio between number of working hours of the graduate per year after placement and 12.

The advantage of the author's econometric model calculation is the versatility of such losses of gross regional product.

We cannot say that these economic calculations indicate imperfect enrollment plans for various specialties in high school, they are likely to show the imperfection of the labor market institutional structure, lack of effective interfacing elements "abilities – technology, technical and technological parameters of jobs".

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**THEORETICAL BASIS OF ECONOMIC GROWTH. CHARACTERISTICS OF ECONOMIC GROWTH IN THE NEW ECONOMY**

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*The article focuses on the problem of economic growth. Economic growth is the basis for increasing wealth. The analysis of the factors which determine it can explain the differences in the level and pace of development in the country in different periods of time. The article reveals the concepts of economic growth and new economy. It also responds to the questions of how to ensure economic growth, what factors are responsible for it. The consideration of economic growth and dynamics of the standard of living forms the basis on which people estimate the work of authorities.*

Such famous economists as Roy F. Harrod, Evsey Domar, Robert Solow, Adam Smith and modern representatives as Nikolay Snopkov, Sergey Rumas, Michael Demidenko, Andrey Klepach have been engaged in the problem of economic growth.

Economic growth is a constant increase in goods and services produced over a certain period of time (usually annually) [1, p.442]. It can be measured in physical terms (tons, meters, pieces, etc.) and in terms of cost.

Economic growth is the basis for solving the majority of social and economic problems. Parameters of economic growth and their dynamics are widely used for the characterization of development of a national economy in economy state regulation. Economic growth has been studied by theoretical economists of all generations. The theory of economic growth has recently become a separate, relatively isolated section of economics.

Nevertheless, clear interpretation and formalization of this phenomenon has not been finished yet. It can be said that economic growth is an increase in GDP per capita. The increase in rates of economic growth leads to the increase in the level of income of budget. Therefore assistance in increasing the rates of economic growth is one of the primary goals of economic policy of any state. People estimate the work of authorities considering the rate of economic growth and the dynamics of the standard of living. But economic growth depends not only on the potential of the national economy, but also on the external economic and foreign policy factors.

Economic growth depends, first of all, on the quantity and quality of natural and human resources, production assets and the efficiency of their use, scientific and technical progress and the society aggregate demand. All the factors are interconnected. On the one hand, dynamic rates of economic growth are possible in case of availability and effective use of production resources and achievements of scientific and technical progress. The shortage of resources restrains economic growth. On the other hand, the country can have the richest natural resources but lack funds for their utilization. The objective factors restraining economic growth in Belarus are limited raw materials as well as fuel and energy base, and poor development of market infrastructure.

The factors of economic growth are [2, p.273]:

- investments;
- quantity and quality of natural resources;
- quantity and quality of manpower;
- labor productivity, education and vocational training;
- fixed capital volume;
- new technologies.

The listed factors facilitate the physical growth of production, but it is also necessary to use or consume the increased gross national product. Therefore growth also depends on the demand and distribution factors. It is important to note a significant feature of investments: at the moment of their realization they increase aggregate demand, but during the subsequent periods they increase aggregate supply, as they raise the volume of production capacities.