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Galina P. Gvozdeva, Elena S. Gvozdeva,

**Labor Practices and Expectations
of the Russian Young Scientists and Innovators**

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“Models of human development of youth in the region: the necessary conditions and
incentives” (I. Kharchenko)*

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The Problem

The growth of human potential in the sphere of science, education, technologies and innovations is the benefit of advanced countries and is seen as the goal in the Strategy of Innovation Growth in Russia up to 2020. At present the most negative effect on the development of the innovation sector in the Russian economy is lack of motives for innovation activity, insufficient experience of development commercialization among members of the academic community. It is an acute problem of the efficiency of labor in transition from raw material to innovative economy. One of the main directions can be creation of preconditions for efficient models of the labor behavior of young people.

The relevance of studying of working practices of young researchers and innovators is connected with search of ways of effective replacement of personnel in scientific and educational sphere, ensuring the flow of young people able to engage in innovative entrepreneurship, as well as the need to increase effectiveness of work.

The Problem

Higher education and training are among the 12 most important characteristics used in the evaluation of global competitiveness. Among the BRICS countries on this indicator Russia has good positions, but the positive changes in China push back the Russian universities from the leadership positions. In particular, for this reason, the Novosibirsk state University`s ranking was postponed from 18 place in 2014 to 19th place in 2015. To hold the position, it is necessary to implement effective development strategies and improve the effectiveness of work.

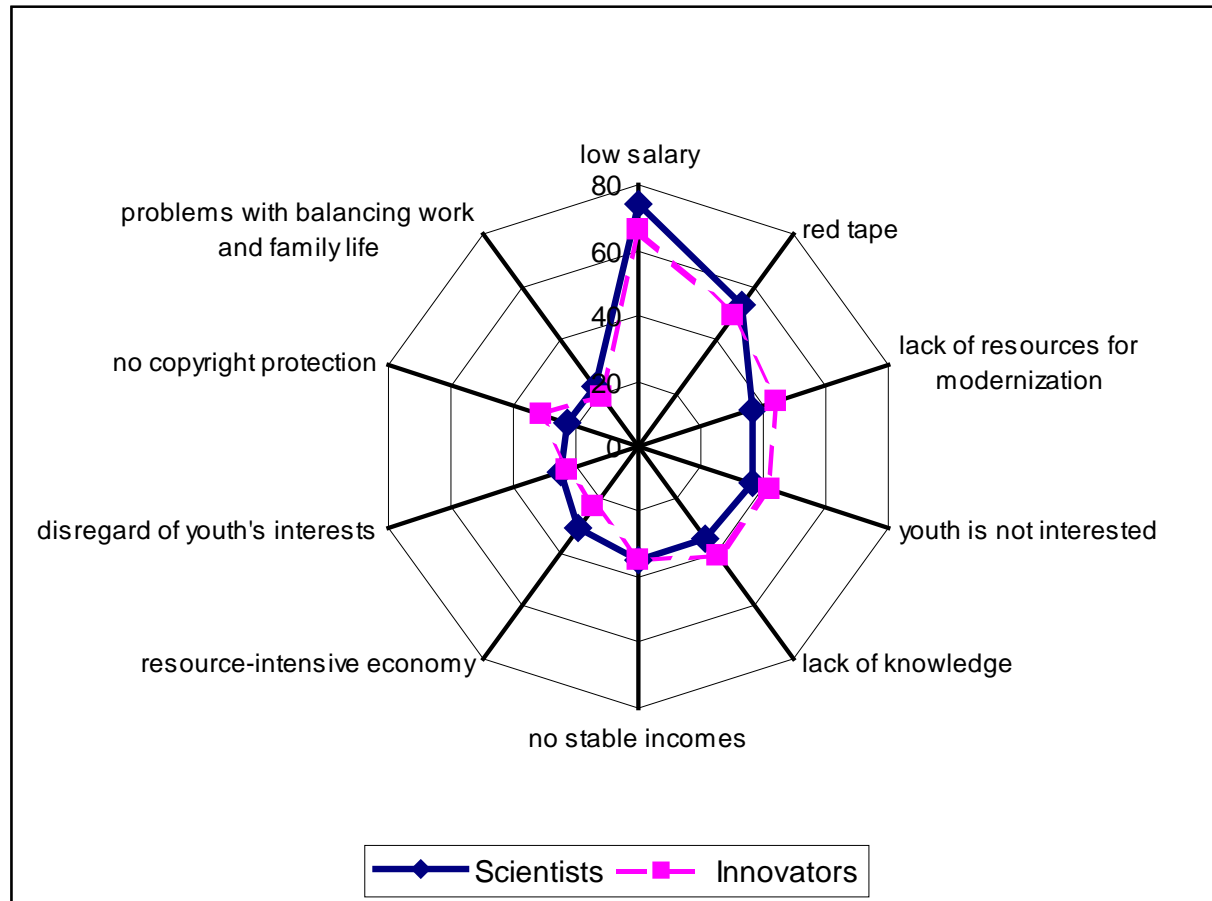
In this context the questions arise: 1) whether the employment practices of modern academic workers of Russia and the BRICS countries correspond to the objectives of the innovation-oriented development of the national economies? 2) what difficulties have the academic workers that prevent them to work more efficiently?

The Problem

According to the Global Competitiveness Report from 2015-2016 Russia have made significant progress in the ranking of countries by the Global Competitiveness Index (GCI): the country moved from 67 place in 2012-2013 to 45 (among 140 countries). The promotion have been made by such factors as the efficiency improvement of higher education and training, financial market development, improving the efficiency of markets for goods, services and labour market. The competitiveness of Russian companies and innovative potential significantly increased.

But the objective characteristics must be enforced by opinions of the workers themselves. It is important to study how young scholars and innovators see the barriers that reduce the effectiveness of their work (Fig.).

The share of respondent who indicated barriers in doing science and innovations, % of those responded



The Tasks

The tasks are,

- first, to substantiate the theoretical concept on the influence of the expected opportunities in the sphere of work on the behavior of young people employed in the sphere of science and innovative business;
- second, to reveal empirical models of behavior caused by different work motivations and the institutional community.

Theoretical Approach

1. On the basis of evaluation of opportunities provided by the institutional community of the science sphere and innovation business, as well as satisfaction with job, we consider the employed academic young people as experts. They have in practice found the both positive and negative features of job, and their opinion reflects adequately the potential of all young people in terms of involvement in innovative and scientific activity.

2. In accordance with one of the recognized theories D. McClelland, determinants of action are the motives, the expectation of success and values.

3. In our characterization of the interaction between motivation, stimulation and satisfaction with work we have used a two-factor model of F.Herzberg, according to which there are two sets of factors, i.e., supporting and motivation. Motivation factors, directly influencing the satisfaction with work are: job content, achieved results and their acknowledgement, level of responsibility, opportunities of career and personal advancement. The supporting factors may cause dissatisfaction with work or they may support avoidance of dissatisfaction, interpersonal relationships with colleagues, subordinates and management, the worker status, etc.

Theoretical Approach

4. We have also used a model of motivation of young people to join an innovation activity proposed by E. S. Gvozdeva, G. P. Gvozdeva, and A. G. Tyrtysnyi, based on V. Vroom's theory of expectancy [Vroom, 1994]. The motivation factors are described in it as a set of variables overlapping each other:

- expectation of relevance of obtained results to own efforts;
- expectation of reward in accordance with the results obtained through own efforts;
- expectation of the value for the person by the obtained reward.

The motivation appears as the apprehension the young person of possible successes and achievements in the sphere of science and innovations, as well as the reward for them, having a value for the person.

Theoretical Approach

5. The motivation may change if the person recognizes non-adequacy of his expectations to the real state of things, or if the rules of management of an activity change (for example, a new system of rewards is introduced –wage supplements, housing subsidies for young people, delegated responsibility).

So, in our approach to central elements of influence are opportunities provided by the institutional community, quality and values of a young man, his notions on his own opportunities, expected results of activity and expected rewards.

When making decision where to work, the young man considers the expected opportunities and advantages of various jobs, their accessibility, his own chances to meet their requirements to applicants, compares them with his life situation and plans for the future, estimates the possibility to realize by it his individual life strategy.

Hypothesis

The underlying assumption is that empirical data to identify various patterns of behavior of the scientific youth which differ by

- 1) the expectations and motives of labor,
- 2) results and the opportunity to influence the development of human potential of the individual and society

The *encouraging models of labor behavior* are understood here as practices established under influence of certain conditions, which allow one to achieve higher results (number of publications, patents, participation in projects), as well as motivation self-realization, higher qualification and satisfaction with labor. The practices originated from other institutional conditions, which provide employment but are not oriented to achievement of high work results and self-actualization but rather provide a possibility for adaptation or search for a new job are called *adaptation models of behavior*.

Database

The data on labor behavior of young scientists and innovators have been obtained in the All-Russian Internet-poll of young scientists in 2011 (Institute of Economic and Industrial Engineering, SB RAS, coordinator E. Gvozdeva), N=1037

The data on motives of choice of profession of University students have been obtained in 2015-2016 in the project RHF №15-13-54001 (IEIE, SB RAS, coordinator I. Kharchenko)

In building empirical models of the behavior of young labor to 35 years of age, a secondary analysis was performed by using answers from 492 persons.

2573 students of 16 universities of the Novosibirsk region (2 groups: want/ do not want to work in science)

Expectations and Models of Labor Behaviour

Various labor practices of young people are presented in the database: 1) social-demographic characteristics of young people, including jobs, positions, presence/absence of science degree; 2) evaluations of available opportunities and benefits of employment; 3) work results (number and quality of publications, patents, etc.); 4) satisfaction with various aspects of work; 5) preferred kinds of reward for achievements in work.

The expectable opportunities and privileges in the sphere of work have been described by means of answers to questions on associations with the words “science” and “innovative business”, and on the attractive features of the work in these spheres. Next the factor analysis was given separately for each of these 4 sets of indicators. Then, using the obtained factors, by means of cluster analysis, the empirical models were built of the behavior of employed young people with different motivations to work.

Expectations and Models of Labor Behaviour

For the *sphere of science* 3 factors characterizing the opportunities and 5 factors of the expected advantages (table 1) have been identified. On the basis of 8 emphasized factors, by means of the fast cluster analysis, an empirical typology of the behavior models of the young people dependent on opportunities the most important for them have been constructed. The most stable of them was a 4-cluster typology, allowing to identify groups of young researchers with different models of behavior and different motivation to work. (The developing models of behavior are marked with ***).

For the *sphere of innovative business*, similarly to the use of the same methods 4 factors characterizing opportunities and 3 factors of expected advantages were identified. The empirical 5-cluster typology of the behavioral models of the young people was built on the basis of 7 identified factors (table 2) .

Expectations in the sphere of work and dominating motivations in empirical models of in-labor behavior of **young scientists (YS)***

Expected opportunities and advantages in the sphere of work	No. of behavior model; dominating motivation
<p>Factors of opportunities for</p> <ul style="list-style-type: none"> – discoveries and implementation of ideas; – <i>material welfare, leadership and authority**;</i> – <i>corruption and unfavorable working conditions</i> <p>Factors of advantages</p> <ul style="list-style-type: none"> – qualities of co-workers and social benefits (including the chance to settle the housing problem); – respite from the army, opportunity to travel abroad and combine scientific work with higher-paid side work; – <i>fruition of dream and self-actualization;</i> – <i>interest in research;</i> – <i>flexible working hours in creative work</i> 	<p>1 – interesting work, realization of intentions*** (55%)</p>
	<p>2 –avoidance of hard work (26%)</p>
	<p>3- social benefits and positive qualities of colleagues (12%)</p>
	<p>4- respite from the army, research trips abroad *** (7%)</p>

* In brackets, % of these answers from the group of this model is shown.

** Italics show the analyzed factors of opportunities and advantages that have had no effect on the found models of behavior.

*** Noted are the most productive youth developing behaviors.

Expectations in the sphere of work and dominating motivations in empirical models of in-labor behavior of innovators

Expected opportunities and advantages in the sphere of work	No. of behavior model; dominating motivation
<p>Factors of opportunities for</p> <ul style="list-style-type: none"> - leadership, implementation of ideas, acknowledgement - discoveries, inventions; - gain of power and corruption; - lack of opportunities <p>Factors of advantages</p> <ul style="list-style-type: none"> -self-realization in creative work; -an opportunity to receive aid at the start of a project, good earnings -- value of the community of innovators; 	1 - self-realization in creative work*** (28%)
	2 –Material motive (23%)
	3- avoidance of hard work (20%)
	4- the value of the innovative environment for self-development*** (15%)
	5-avoiding the risks and difficulties (14%)

* In brackets, % of these answers from the group of this model is shown.

** Italics show the analyzed factors of opportunities and advantages that have had no effect on the found models of behavior.

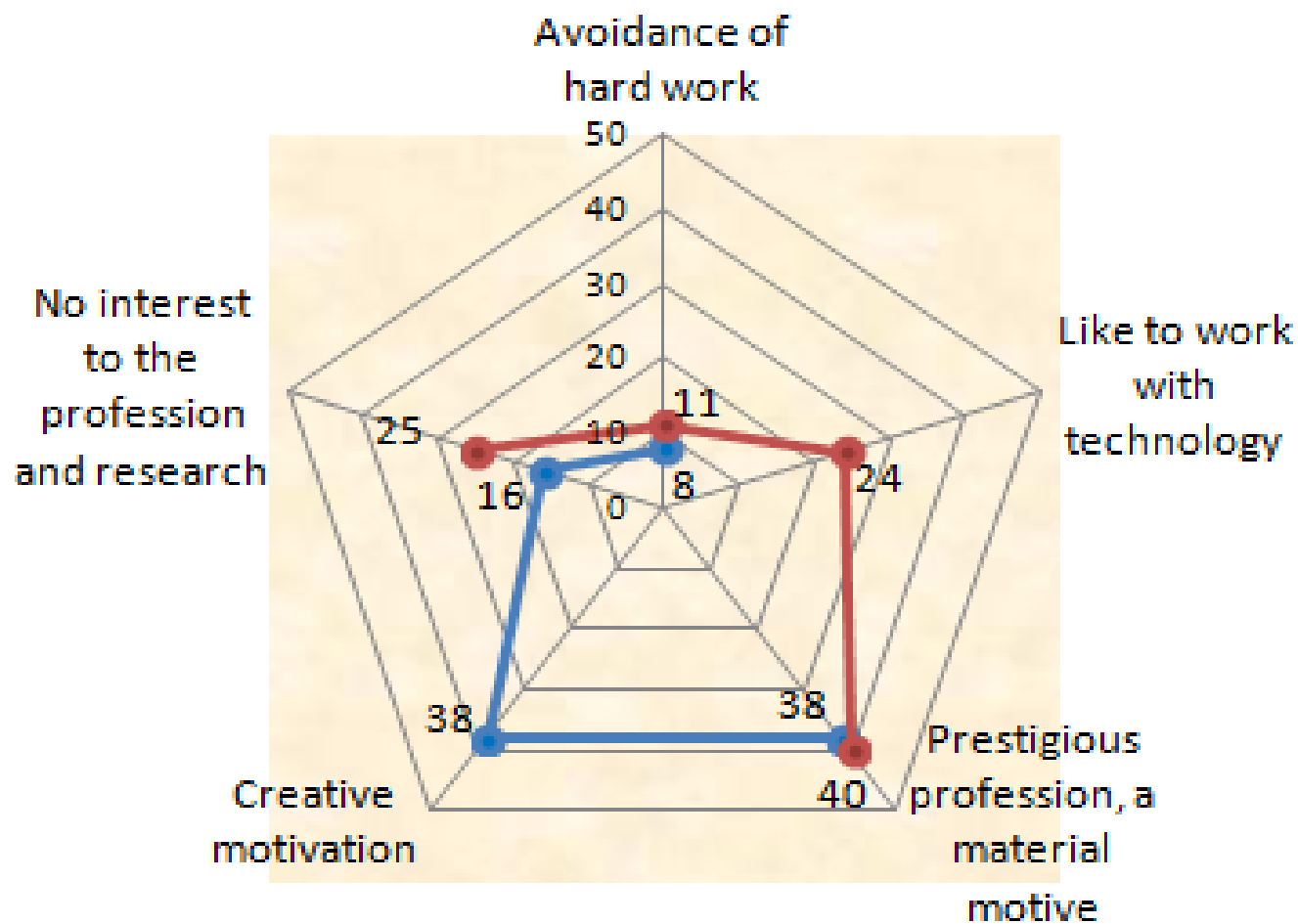
*** Noted are the most productive youth developing behaviors.

Comparison of motivation of choice of profession of **students** and **working youth**

It is interesting to identify the motivation of the profession graduates of the universities who “want” and “do not want” to work in science. “Want” - only a quarter (27%) graduates, of which 38% of creative motivation, 24% - there is no interest in the profession, they are looking for an easy life. Others focused on the prestige of the profession and material wealth (38%) (Fig.).

Students material motive is stronger than the young workers (model 2 of innovators – 23%) . This should be taken into account in the process of reforming science. Now a material motive “pushes” young people from science.

Motives of choice of profession of two groups of University graduates, Novosibirsk oblast,



● want to work in science

● don't want to work in science

Results

1. Among the found the most productive youth developing models of labor behaviors, two were described as typical of young scientists (YS) and another two as typical of innovators. The criteria were the achieved results by the group of this model and their satisfaction with work. The number of scientific publications is much higher among YS, oriented to implementation of own ideas, on travels abroad and delay from army (their share among YS is 62%). The most satisfied with work are those who have interest in science, while those who avoid army are negatively disposed to “work prestige” and “opportunity of making career in science” (the satisfied are 79 and 39%, respectively).

Among innovators the developing models are practiced less (43%), since they undergo higher uncertainty and risks, than YS. (Criteria were participation in the implementation and management in innovative project and satisfaction with work).

Results

2. It is shown that, on the one hand, both in science and in the sphere of innovative business, fruitful work and work satisfaction are found in young people whose expectations are associated with the presence of opportunities for creative work and implementation of plans. Such were 55 and 28%, respectively. On the other hand, attention is drawn to a large proportion of young people who work in these areas, but do not see opportunities for discoveries, work and implementation of plans. Models of avoiding difficulties and intense work are adhered to by 26% in science and by 34% in innovative business. More than half of young people are not enough motivated to innovation. The group not expecting to achieve material well-being by working in science was not identified. Young scientists understand that working in this area provides low opportunities to gain leadership and power.

Results

3. On the whole, the constructed models of the behavior of young scientists and innovators in the sphere of work makes it possible to speak on the urgent need to form a more developmental institutional environment, including effective work incentives, training and technological updating. It is necessary to recognize the effectively working young professionals as real and potential subjects of modernization of Russian economy; they are able to critically perceive opportunities and to adequately assess them.

The target guideline for the future – there is to create conditions for the growth of productivity and job satisfaction youth in the areas of science and innovation business.

Thank you for your attention !

gvozdeva@ieie.nsc.ru,
elena_gvozdeva@mail.ru