

# Petroleum staff reluctance and adjustment to innovative changes

Yu S Makasheva<sup>1</sup>, N P Makasheva<sup>1</sup>, V V Remnyakov<sup>2</sup>, B S Burykhin<sup>2</sup> and I V Shenderova<sup>1</sup>

<sup>1</sup>Institute of Natural Resources, National Research Tomsk Polytechnic University, 30 Lenin Ave., Tomsk, 634050, Russia

<sup>2</sup>National Research Tomsk State University, 36 Lenin Ave., Tomsk, 634050, Russia

E-mail: yuliam@pptsu.ru

**Abstract.** The modern economy is developing in the direction of innovations implementation. Innovations are becoming the basic prerequisite for the competitiveness of the enterprises. The Russian oil and gas sector innovation issue is very crucial. Low innovation activity of companies could result in a serious threat due to the strong global competition, increased uncertainty and risks. The need for innovative changes often meets reluctance. The reasons of it vary and require serious research. Managers should give special attention to the development of adjustment ability of the staff, to introduce modern methods for improving the adjustment potential of the enterprise staff.

## 1. Introduction

Innovative component is becoming increasingly valuable in the dynamic development of the production. It has become a key factor of economic growth. Innovations, introducing something new, means launching to the market of new products with a high scientific and technical potential and advanced consumer satisfying qualities. Innovative way of economic development involves a continuous search and implementation of innovative ideas, which allow increasing the efficiency of social production.

## 2. Materials and Methods

The innovative development of the economy is a complex dynamic process, which combines challenges related to - the necessity of society's intellectual potential building and development; scientific research development; studying of new technological breakthrough discoveries and inventions; advanced technology and equipment implementation; new types of raw materials research; choosing of the best contemporary forms of production organization and management [1].

These issues are extremely relevant for the leading sector of modern Russian economy – the petroleum industry. The oil and gas sector plays a strategic role in the country's economy, providing almost all economic sectors with fuel and energy resources and a wide range of petroleum products. Oil and gas resources estimate for over 70% of the primary energy balance of the country; fuel and energy complex enterprises provide more than 30% of industrial production volume in Russia [2]. The share of oil and gas revenues in the federal budget is about 50% at the contribution to country's GDP of about 1/3 and to the export of almost 2/3. A large concentration of the world's oil and gas resources



on the territory of our country, at a large demand for these resources in the world economy, makes the industry highly required in the world market.

But the modern world market is characterized by the intensifying of global competition on the background of growing uncertainty and risks. In recent years there has been a significant transformation of the global energy markets. New technologies in oil production significantly increased the volume of available mineral reserves and revealed new leaders of the production growth (the USA and Iraq). These technologies also led to a steady increase of the oil recovery index. The rapid development of technologies of liquefied gas transportation, led to the serious changes in global gas market.

In order to keep the position in the market, to provide competitive advantages and dynamic growth, a company needs to pay close attention to the innovations.

According to the research data of the International PwC Practice on strategy development in the field of innovations, covering the representatives of petroleum companies from 18 countries, a company, leading in the field of innovative solutions development, gains the significant competitive advantage. The growth rate of 20% of the surveyed companies, leading in the field of innovations developments, turned to be on 16% higher than the growth rate of the least innovation oriented companies. In the next five years the increase of the world's average growth rate is forecasted to double. [3]

The innovative activity of Russian companies is quite low. The experts noted a significant technological gap in the oil and gas industry [4]. The innovative products account in exports of about 1.5%, which is ten times lower than in the world in average; 60.3% expenses on technological innovation falls on the purchase of machinery and equipment, while the share of self development does not exceed 12%. The share of R & D expenditures of Russian companies does not exceed 0.02% from the revenue. The unit costs per 1 ton of oil equivalent are less than 0.2 US dollars. Similar costs of ExxonMobil and Total are in average 1\$, Chinese and Brazilian companies – from 2, 35 to 3.22 US dollars. The lag in technological development is reflected, in particular, in the low level of productivity of the Russian oil and gas sector, which estimates about 35% from the US production level [5].

Production, which does not involve innovative developments, becomes weak and uncompetitive. Therefore, the policy of oil and gas complex senior management is to improve the competitiveness of the companies to the international level on the basis of the latest achievements in science and technology. Innovations are the background for the successful development of the company.

But innovative production - is not only the introduction, development and offer of a new product. Innovation - is, above all, the ambition of company's staff to the continuous development of creative solutions for tasks solving. However, innovations are always associated with changes. A human due to its nature is inclined to be apprehensive to changes, which bring the uncertainty and break the usual order of things. Isaac Newton defined inertia as an inherent power of substance having the ability to reluctance [6]. The phenomenon of reluctance occurs to some extent at any changes. Unambiguous introduction of changes is the exception rather than the rule. Studies have shown that up to 80% of innovations fail, and in more than 50% of cases, the reasons are intercompany factors [7].

With the development of innovative processes, the issue of reluctance to changes becomes more and more relevant. Science and practice are currently focused on the management of changes with the aim to explore the possibility of change management and the ways of overcoming negative attitudes towards them.

Reasons for reluctance to the innovative changes are numerous and different. They can be caused by both external and internal factors, to be of objective and subjective character.

The well-known classification of J. Cotter and J. Schlesinger highlights the reasons of reluctance to changes at different levels:

- the individual level - self interest, misunderstanding and lack of trust, low tolerance, deviation in the situation evaluation;

- the group level (collective level) - peer pressure, fatigue caused by changes, previous bad experience [8].

V.M. Konovalov in the "Innovatsionnaya saga" argues that, ultimately, all the reasons could be combined in two groups: wrong understanding of the situation and the fear that if the innovations are introduced it will lead to the impairment of personal interests. These reasons are often interconnected [9].

Reluctance to innovation could be of any types. It could emerge actively and openly or to be of passive and hidden character. Passive reluctance reflects in the form of absenteeism, delay in assignments fulfilling, indifference and reducing working ability; active reluctance reflects in strong changes neglecting: abandonment of innovations implementation, open opposition, sabotage.

The modern theory and practice has developed a number of approaches to overcoming the issue of reluctance. I. Ansoff highlights four groups of methods which allow predicting, reducing and controlling the reluctance to changes: forced method; method of adjustment changes; crisis management and reluctance management. J. Cotter and L. Schlesinger developed six ways to overcome the reluctance, which could be divided into "mild" and "strong". Strong ways are focused on the forcing. In this case, the correct actions are achieved via penalty. In the innovation activity, where the creative component prevails, such methods are ineffective. Their application could lead to the success only in the exceptional cases of urgent necessity and only for the short term period.

Mild ways to overcome reluctance to innovation imply informing, discussion, conviction, help and support. There are a great number of such methods.

Not only managers but also sociologists, psychologists are involved in the research of methods, techniques and forms of overcoming reluctance. The practical application of these methods increases the efficiency of innovation activity at the enterprises and allows successful solving of the problem staff adjustment to innovative changes.

Currently the adjustment ability is one of the key challenges of personnel management. This concept emerged in the management with the development of systematic approach as the characteristic patterns of functioning and development of different systems at the interaction of internal and external conditions of their existence. In general sense, the adjustment is the adaptation of the system to the character of the individual influence or to the condition changes in general. The process of adjustment occurs when in the system "body-environment" the significant changes emerge. This provides the generation of a new state, adjusted to the changing conditions. Due to the fact that the body and the environment are not static, but are in a dynamic equilibrium, their correlation constantly changes. Therefore, the process of adjustment is a continuous process.

The adjustment in staff management is considered from the point of a new employee adjustment to the new working conditions and place. Such interpretation of adjustment is called "probation period", "career guidance", which are understood as the process preceding the direct entry of a new employee into organization and getting of new position. These processes are closely connected with training, coaching and consulting of the employee.

But this approach to the adjustment is not sufficient. The adjustment of staff in the organization should not only be limited to the orientation in the professional sphere. It is a multifaceted phenomenon, and it could be considered much deeper with the respect to a variety of situations.

Currently, two models of adjustment have been developed in management practices: adjustment at employment and adjustment to the changing conditions in the production process. The first model prevails. The second model is also known as working position adjustment related not only to new employees, but also to the whole company's staff, who has to adjust to changes under the usual working conditions. The changes may be related to the need to develop additional job functions, the increased working load on the staff, the gap between actual and desired qualification of the employee, etc. Many employers experience stress due to the need to be in a constant state of readiness to changes in the future. Therefore, the issue of adjustment is becoming increasingly important not only in the initial stages of adjusting to the new team, but throughout the working life. This issue acquires a special attention under the conditions of innovative changes. Proper adjustment management allows

mitigating the negative aspects, foreseeing and overcoming of the reluctance to changes, encouraging the creative attitude to work and increasing the innovation activity of workers.

It should be noted that traditionally the management understands the adjustment as a process which influences greatly the factors, predetermining its progress, time and reduction of the negative consequences. But the adjustment is also a self-regulating property of any live system. In the process of adjustment the person stands as active subject of this process. Therefore, the understanding of adjustment should not be limited only to the understanding of it as a process. It should also be considered from the point of personal property.

The notion of adjustment was introduced into economic science from biology. Regarding the socio-economic systems, the adjustment is the property, which characterizes the ability of a system to normal function under the environmental parameters changing and its adjustment to these changes. Adjustment could be characterized by sensitivity of the system to internal and external changes.

The employees' adjustment ability is a certain individual characteristics that allow quick and adequate challenging situation overcoming, normalizing the interaction with the environment. Man as an active subject of the adjustment process, who adjusts to the environment considering his needs, interests and ambitions.

Adjustment is the result of interaction between employee's abilities and regulatory requirements of his professional activity. These abilities could be congenital - the instincts, temperament, emotions, appearance, physical condition; and acquired - social status, education, competence.

Adjustment ability of the employees may increase or decrease under the influence of the social environment, working conditions, training, lifestyle. Thus, according to the research, people develop greater ability to adjust in the case of serious changes by demonstrating great stress resistance.

Individual reactions to the changes are different, as well as peoples' ability to adjust. These abilities should be developed and are necessary to be developed. Under the rapid and often unpredictable changes in innovations it is particularly important. High adjustment ability allows employees to cope effectively with the changes. According to the leading Western employers, adjustment is among the top ten skills which are required from the employees. The reports on personnel management from 2014 states that HR-directors are more inclined to hire the employees taking into account their ability to cope with changes and uncertainty, and in every second case they note that the ability of the staff to cope with emergency issues is a key attribute for future success in business.

Employee with high ability to adjust is more open to innovations, easily accepts new ideas and does not afraid changes. Experts identify some important personality traits that contribute to the development of adjustment ability in humans. These are - openness and tolerance, psychological stability, dominance, self-perception and self-estimation. At innovation-oriented organizations, these qualities should be paid a special attention. Cultivating such qualities in employees, allows influencing the depth and the extent of their adjustment ability.

### **3. Conclusion**

Human resource management of the petroleum industry starts to be more and more oriented to the tendencies connected with the global strategic objectives as well as the innovations and investment development of the industry. According to a number of experts, a principally new approach for providing the country's petroleum sector by human resources of new type – employees with high adjustment ability to innovations. This requires the intense application of modern techniques to stimulate the growth of adjustment ability and innovation activity of workers. For the successful implementation of innovative development, it is necessary to create favorable conditions in the working team, to introduce modern technologies of working with the staff which enable the employees to realize their potential.

### **4. References**

[1]. Makasheva N P 2013 The state support and financing of innovative activity in Russia and the

- world countries *Tomsk state university journal* **3** 161–73
- [2]. Pavlovskaya A V 2013 *Effektivnost innovatsionnogo razvitiya neftegazovogo kompleksa na evropeyskom Severe* (UGTU: Uhta) p 266
- [3]. Gateway to growth: innovation in the oil and gas industry [web-site] URL: <http://www.pwc.com/>
- [4]. Sharf I, Malanina V and Kamynina L 2014 Features of the marketing strategy of oil and gas companies in exploration drilling *IOP Conf. Ser.: Earth Environ. Sci.* **21** 012047 URL:<http://iopscience.iop.org/1755-1315/21/1/012047>
- [5]. Makov V M 2010 Faktornyiy analiz innovatsionnoy deyatel'nosti neftegazovogo sektora Rossii *Audit i finansovyy analiz* **2** 194–98
- [6]. Nyuton I 1989 *Matematicheskie nachala naturalnoy filosofii* (Moscow: Nauka) p 688
- [7]. Rossinskiy E O 2002 Organizatsionnyiy mekhanizm preodoleniya soprotivleniya izmeneniyam, PhD thesis 08.00.05, Tver, p 189
- [8]. Kotter J P and Schlesinger C A 1979 Choosing Strategies for Change *Harvard Business Review* **57** 106–14
- [9]. Konovalov V M 2005 *Innovatsionnaya saga* (M.-SPb-Kiev: Vilyams) p 224