**RELAÇÕES INTERNACIONAIS NO MUNDO ATUAL** 

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# STIMULATION OF INTELLECTUAL INNOVATION OF MANAGERIAL STAFF

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# ABSTRACT

Research goal: The aim of the reported study is to develop a methodology for encouraging intellectual innovation among managerial staff, taking into account the individual labor participation of the employee, which would provide scientific validity in the allocation of the wage fund. Results: The authors propose a methodology for a comprehensive quantitative assessment of the innovation potential of middle and senior management of the organization with consideration of intelligence, creativity, and enterprise. **Conclusion:** The integral coefficient proposed in the paper reflects the excess of the basic cost estimate of the human capital of an employee, corresponding to the intellectual and gualification level, over the basic cost estimate of the human capital of the smaller/lower intellectual and qualification level of the professional qualification group.

Keywords: Motivation; Incentive; Innovative activity; Individual labor efforts; Cost estimation of human capital.



# ESTÍMULO À INOVAÇÃO INTELECTUAL DO PESSOAL GERENCIAL

## RESUMO

**Objectivo da investigação**: O objectivo do estudo relatado é desenvolver uma metodologia para encorajar a inovação intelectual entre o pessoal de gestão, tendo em conta a participação individual do trabalhador, o que proporcionaria validade científica na atribuição do fundo salarial. Resultados: Os autores propõem uma metodologia para uma avaliação quantitativa abrangente do potencial de inovação dos quadros médios e superiores da organização, com consideração da inteligência, criatividade e empreendedorismo. **Conclusão**: O coeficiente integral proposto no artigo reflecte o excesso da estimativa do custo básico do capital humano de um empregado, correspondente ao nível intelectual e de qualificação, sobre a estimativa do custo básico do capital humano do grupo de qualificação profissional.

**Palavras-chave:** Motivação; Incentivo; Actividade inovadora; Esforço individual de trabalho; Estimativa do custo do capital humano.

## **1 INTRODUCTION**

Amid the establishment of an innovative economy, modern organizations are forced to be in constant search of resources to ensure the factors of economic growth and increase the competitive advantages in the sale of goods (services). It is this circumstance that has given rise to a sharp increase in the interest of economic science in the creative abilities of a person, their innovative, creative, business activity, and enterprise.

Existing practice proves that the costs associated with the formation, accumulation, and preservation of human capital become the most effective investment because human capital (as part of the intellectual capital of the organization) activates, engages, and gives impetus to the development of all necessary factors of innovation and production processes, thereby providing social and economic synergy effects.

A way to increase the intellectual capital of the organization is to activate the innovative activity of middle and senior management through the mechanisms of motivation and incentives, namely by investing in people and their knowledge, abilities, and experience.

Today, the study of problems of increasing the effectiveness of innovation, creativity, and business activity implemented in modern conditions in the form of multiplication of human capital and intellectual capital of the organization, is not only relevant but is put forward as a priority task in the structure of socio-economic research (Cherkesova et al., 2016).



In this connection, the purpose of this study is to develop an original methodology and approach to quantitative assessment of the innovative potential of middle and senior management of the organization accounting for intelligence, creativity, and enterprise in the implementation of the functions performed. This will provide an economically justified differentiation of wage rates both within the group and between professional qualification groups through the use of raising coefficients developed in the study, which account for the cost estimate of an employee's human capital in accordance with classification into a particular intellectual and qualification level of the professional qualification group.

Proceeding from the set goal, the following research objectives are defined:

- to allocate a group of characteristic attributes for quantitative assessment of the innovation potential of middle and senior management of the organization;

- to offer criteria for evaluating a group of attributes and determine their significance;

- to develop a method of a comprehensive quantitative assessment of the innovation potential of middle and senior management taking into account intelligence, creativity, and enterprise;

- to develop and offer for use a fair and scientifically grounded methodology for differentiating basic salaries (basic official pay rates, basic wage rates) to increase motivation and stimulate innovation activity of the organization's management.

# 2 MATERIALS AND METHODS

In accordance with the current vision of the need to form and develop high-tech, competitive organizations and industries, along with the development of engineering and technology, special attention is paid to improving the efficiency of personnel work, identifying ways to rationalize the use of labor and human potential; increase in the level of employee training and optimization of their professional and qualification structure; development of material incentives and motivation for employee's creative abilities; creation of conditions for better use of working time; better realization of creative, innovative, and professional potential; regulation of labor organization and rationing, economical use of all types of resources; rationalization of labor processes; wide introduction of innovations in the socio-economic sphere.

In this context, of interest is a study by L.N. Topchienko (2006), as the researcher has developed a method of cost estimate of labor potential that determines its restorative component, reflecting the compensation of labor costs in accordance with



qualification and intensity, as well as an accumulative component, reflecting the contribution of labor to the formation of net income. However, the method offered by Topchenko is not used widely because it is applicable in a narrow range when identifying the reserves for improving labor efficiency during personnel performance appraisal in organizations. The author does not consider the issues of evaluating the innovation potential of an employee in theoretical and practical terms (Topchienko, 2006).

Among the works within the context of improving the organization of wages and salaries and labor incentives, especially notable is a study by N.A. Balalaeva (2009), which discloses the principles and methods of forming a system of effective motivation of specialist labor in companies. The author of this work: summarizes and compares the experience of labor motivation in Russian and foreign practice, identifies areas to improve the effectiveness of incentives for specialists through strengthening the role of official salaries with differentiation of wages according to the skill level of the employee, proposes a methodical approach to the systemic regulation of labor motivation, forms a methodology for evaluating the performance of specialists to identify intraproduction reserves of labor organization based on the comparison of potential and factual results of work, and develops a set of methodological recommendations to strengthen the role of wage rates in raising the creative activity of specialists. However, this scientific work does not adequately consider criteria for assessing the creative, innovative, and business activity of staff and does not disclose the methodology for finding intraproduction reserves.

A great part of stimulating measures is aimed at the all-out search for the reserves of labor productivity growth, the reduction of the labor intensity of work, saving resources, improving quality and competitiveness, reducing production costs, and motivating the quality and efficiency of work, especially of individual labor achievements.

In the USA, Germany, Great Britain, and other industrialized countries, personnel performance evaluation is performed with various analytical (expert) methods of efficiency assessment that comprehensively consider a complex of technical, organizational, and socio-economic factors. Despite some subjectivity of these methods, their precision is typically high, as they rely on different quantitative estimations.

The application of the aforementioned methods brings a certain freshness to the socio-psychological climate of the team, reduces tension between executives and staff,



and creates favorable conditions for reasonable wage differentiation.

For qualitative assessment of the innovative potential of middle and senior management, the recommended method is a quantitative assessment scale accounting for such factors as intelligence, creativity, and enterprise in the execution of the performed functions, which are critical in creating added value and raising the company's competitiveness. The number of factors to be considered and the point scale used can be changed depending on the objectives and the conditions of the organization's activities (Demidova et al., 2019; Voynarenko et al., 2020; Zalutska et al., 2021).

The recommended scale for quantitative assessment of the innovation potential of middle and senior managers is presented in Table 1.

Group of	Factor for quantitative	itative Criterion Criteria for factor rating by level			
attributes	assessment of innovation	significan	Low – 1	Average –	High – 3
considered	potential	ce, %	point	2 points	points
1 Intelligence	1.1 Level of professional competence	γ <sub>1.1</sub> = 10	Low	Average	High
	1.2 Level of participation in scientific and technical developments (projects)	γ <sub>1.2</sub> = 10	Low	Average	High
	1.3 Complexity of managing scientific and technical processes	γ <sub>1.3</sub> = 9	Low	Average	High
	1.4 Mastery of related knowledge, skills, and abilities (professions)	γ <sub>1.4</sub> = 9	Insufficient	Average	High
2 Creativity	2.1 Level of participation in the creation of an idea, an innovation	γ <sub>2.1</sub> = 10	Low	Average	High
	2.2 Level of creative thinking	γ <sub>2.2</sub> = 9	Low	Average	High
	2.3 Level of patent and/or publication activity	γ2.3= 8	Low	Average	High
3 Enterprise	3.1 Level of business and leadership skills	γ <sub>3.1</sub> = 10	Low	Average	High
	3.2 Level of socio-economic activity	γ <sub>3.2</sub> = 9	Low	Average	High
	3.3 Level of information and communication activity	γ3.3= 8	Low	Average	High
	3.4 Level of life wisdom and experience	γ <sub>3.4</sub> = 8	Low	Average	High

**Table 1**. Recommended scale for quantitative assessment of innovation potential in middle and senior

 management of the organization

Comprehensive quantitative assessment of the innovation potential of middle and senior management of the organization, with account of intelligence, creativity, and enterprise in the implementation of the functions performed by the manager ( $K_{ip}$ ) is performed according to the formula (1):



$$K_{ip} = \sum_{d=1}^{n} I_d \gamma_d + \sum_{f=1}^{m} C_f \gamma_f + \sum_{g=1}^{k} E_g \gamma_g$$
(1)

where  $I_d$ ,  $C_f$ ,  $E_g$  – assessment of innovation potential by groups of factors in the implementation of the functions performed – intelligence, creativity, and enterprise, respectively, in points;

 $\gamma_d$ ,  $\gamma_f$ ,  $\gamma_g$  – significance of the factor by groups of attributes – intelligence, creativity, and enterprise, respectively, in fractions of units;

n, m, k – number of factors considered.

A comprehensive assessment can be performed based on potential and factual data. In this case, the reserve ( $\Delta K_{ip}$ ) of improvement of the manager's innovative potential by individual factors (attributes) or in general is determined using the formula (2):

$$\Delta K_{ip} = K_{ip}{}^{p} - K_{ip}{}^{f} \tag{2}$$

where  $K_{ip}^{p}$  – general quantitative expert assessment of a manager's potential to improve their intelligence, creativity, and enterprise;

 $K_{ip}^{f}$  – general quantitative expert assessment of the factual results of the manager's activities to improve intelligence, creativity, and enterprise in the implementation of their functions.

Thus, the calculated complex quantitative assessment of the innovation potential of middle and senior management of the organization with regard to intelligence, creativity, and enterprise (K<sub>ip</sub>) will provide a scientifically sound and fair differentiation in stimulating the innovative activity of the organization's management.

The condition for the objective differentiation of wage rates for top and middle management is the application of gradation into levels and sublevels of professional qualification groups in professional standards developed and recommended for use by the Ministry of Labor and Social Protection of the Russian Federation.

Given the above, the wage rate of the manager may vary significantly in accordance with their assignment to a certain intellectual and qualification level of the professional and qualification group and is calculated using the formula (3):

$$S_{ij} = S_B \times K_{INT_{ij}} \times K_{ILE_{ij}} \times K_{IP}$$
(3)



where i – intellectual and qualification level of the performed labor functions specified in a particular professional standard;

j – professional qualification group to which the employee can be assigned according to the type of professional activity, available qualifications, skills, and experience;

 $S_B$  – average salary in the region, rub.;

 $K_{INTij}$  – integral coefficient reflecting the excess of the cost estimate of the human capital of the organization's employee in accordance with their classification in a particular intellectual and qualification level *(i)* of the professional qualification group *(j)* in relation to the cost estimate of the human capital of an employee at the beginning (baseline) intellectual and qualification level *(i)* of the professional qualification group *(j)*, reflected in the relevant professional standards, in fractions of units;

 $K_{ILEij}$  – coefficient of individual labor efforts of an employee in accordance with belonging to a certain intellectual and qualification level *(i)* of the professional qualification group *(j)*, in fractions of units;

 $K_{IP}$  – comprehensive quantitative assessment of the employee's innovative potential, considering intelligence, creativity, and enterprise in the implementation of the functions performed, in points.

The use of the average regional salary as a starting point for calculating the wage rate of the manager is justified, since the regional aspect is reflected in the number of knowledge-intensive industries and, accordingly, the demand for highly intelligent and productive labor.

The practical meaning of the introduced coefficient  $K_{INTij}$  lies in determining the degree of differentiation of wage rates in the professional qualification group *(j)* depending on the cost estimate of the human capital of the organization's worker. Accordingly, the higher the intellectual and qualification level *(i)* of the employee, the higher the value of this differentiation coefficient in the group. The recommended differentiation step in the professional and qualification group *(j)*, cannot be less than 20% because, in this case, it will be unable to assure an objective and fair distinction between the wage rates of an employee involved in intellectual and creative activity in the performance of their labor functions.

The proposed coefficient of individual labor effort of a worker at a particular intellectual and qualification level (*i*) of the professional qualification group (*j*),  $K_{ILEij}$ , ensures the process of differentiation of wage rates between professional qualification



This coefficient can be determined according to the degree of total reduced costs of education or, in other words, the knowledge, skills, and abilities necessary to classify the employee to the appropriate intellectual and qualification level *(i)* of the professional qualification group *(j)*, depending on the degree of mastery of the necessary qualifications.

The coefficient of individual labor efforts of an employee at a specific intellectual and qualification level *(i)* of the professional qualification group *(j)* can be calculated using formula (4):

$$K_{ILE_{ij}} = 1 + \left(K_{EDU_{ij}} - 1\right) \tag{4}$$

Herein,

$$K_{EDU_{ij}} = \frac{R_{ij}}{R_{11}} \tag{5}$$

where  $R_{ij}$  – total reduced costs of education (knowledge, skills, and abilities) necessary to master the qualification corresponding to the *i*-th intellectual and qualification level of the *j*-th professional qualification group, rub.;

 $R_{11}$  – total reduced costs of education (knowledge, skills, and abilities) necessary to perform the work with minimal intellectual and qualification requirements, rub.

 $K_{EDU_{ij}}$  – coefficient reflecting the ratio of the total reduced costs of education (knowledge, skills, and abilities) required to master the qualification corresponding to the *i*-th intellectual and qualification level of the *j*-th professional qualification group compared with the minimum qualification required to perform the labor functions (Cherkesova et al., 2021).

# 3 RESULTS

Research gives evidence that considerable reserves for improving the efficiency of highly intellectual, innovative, and productive work are hidden in increasing the stimulating role of wage and salary increments for middle and senior management of the organization. The establishment of such pay supplements in practice relates to the personal, business, and qualification qualities of the organization's staff. In the face of the rising role of human potential, the employer places increasing demands on the level



of innovative activity of middle and top managers, which in turn raises the need to improve methodological approaches to determining and assessing this level of innovativeness.

Assessment of the innovative potential of top and middle management with consideration of intelligence, creativity, and enterprise in the performance of job functions is of key importance to the employer, as the innovative potential of staff can provide a range of competitive advantages in acting ahead of the curve. A greater role should be attributed to stimulating ware rate increments for improvement of the manager's innovative potential. The rational use and broad introduction of these increments contribute to improved staff qualifications, reduced staff turnover, and better quality and efficiency of highly intellectual, innovative, and productive labor, particularly its higher competitiveness and implementation of advanced Russian and foreign experience in effective knowledge management.

Both research and experience suggest that to raise the innovative potential and business activity of middle and senior managers, regulations for the payment of salary increments to employees in highly responsible jobs and senior staff must be developed in complex and close association with other forms and methods of incentivization and discussed with a potential employee in advance at the conclusion of the employment contract.

The method developed and described in this study ensures the realization of a comprehensive quantitative assessment of the innovative potential of middle and senior management with consideration of intelligence, creativity, and enterprise in the performance of their functions. Aside from this, we believe that the decisive role in the incentive factor of innovative activity of middle and top management is played by raising coefficients, which account for the amount of individual labor effort extended by the worker and the valuation of their human capital.

The introduced coefficient of individual labor effort ( $K_{ILE_{ij}}$ ) ensures the differentiation of staff into certain intellectual and qualification levels (i) of professional qualification groups (j) depending on the sum reduced costs of training (knowledge, abilities, and skills). The meaning of the individual labor effort coefficient is that it allows for more precise classification of a worker to a specific intellectual and qualification level of the professional qualification group according to the cost estimate of the knowledge, abilities, and skills obtained by them previously and their current value, i.e. the more time and resources are spent on gaining knowledge, abilities, and skills, the higher the



employee's professional qualification group and intellectual and qualification level.

The provided integral coefficient ( $K_{INTij}$ ) establishes the excess of the cost estimate of the worker's human capital in accordance with their intellectual and qualification level (*i*) and professional qualification group (*j*) over the cost estimate of the human capital of a worker at the beginning (baseline) intellectual and qualification level (*i*) of the professional qualification group (*j*). This coefficient finds its logical application in the developed and effective professional standards. The practical meaning of the integral coefficient consists in defining the degree of differentiation between basic wage rates in the professional qualification group depending on the valuation of the worker's human capital, i.e. the higher the qualification level in the professional group, the higher the integral coefficient of differentiation within the group.

The proposed quantitative assessment (K<sub>IP</sub>) of the employee's innovative potential considering their intelligence, creativity, and enterprise in the performance of their functions is rated in points, which allows defining the difference in the salary to be paid in accordance with the level of innovative activity achieved in the given period. The recommended scale for quantitative assessment of the innovative potential of middle and top management can be modified and transformed to satisfy specific goals and objectives in stimulating an increase in the innovative and business activity of middle and top managers in the company. Thus, it can continuously adjust to the changing demands of the time to the attributes to be considered in the quantitative assessment of innovative potential in middle and senior managers.

Therefore, we believe that the use of the developed and presented coefficients will provide an objective and fair differentiation of wage rates both within professional qualification groups and between the groups. Accordingly, the suggested approach to the motivation and stimulation of the innovative activity of middle and senior management will allow approaching the distribution of wage funds in the organization in an effective and scientifically grounded way (Kharchenko et al., 2019; Makazan & Los, 2020; Mustafin & Ignateva, 2016; Popov & Vlasov, 2018; Zaytsev et al., 2020).

The advanced character of the developed method for the differentiation of salaries and wage rates of middle and top management with the account of the comprehensive quantitative assessment of the innovation potential consists in the flexibility of its application. Depending on the goals and objectives put forward by the organization, the evaluation scales can be formed with completely different groups of attributes to be considered, ones that would be relevant to a particular organization (in our case, these are intelligence, creativity, and enterprise). The emphasis can also be placed on



factors different from the proposed for quantitative assessment of the innovation potential of middle and senior management, or the ratio of the significance of the above criteria can be chosen in accordance with the requirements imposed by the expert commission.

## 4 CONCLUSION

The proposed method for the differentiation of salaries and wage rates of middle and top management with consideration of a comprehensive quantitative assessment of innovation potential, as well as the cost evaluation of an employee's human capital and their individual labor efforts, will solve a range of managerial tasks, specifically:

- first, it will secure an increase in the innovative activity of top and middle management through the incentive component in the calculation of official salary, the wage rate in the form of the raising coefficient and a comprehensive quantitative assessment of the innovative potential of an employee based on intelligence, creativity, and enterprise;

- second, it will allow to consider the cost estimate of human capital of the employee in accordance with their classification into a certain intellectual and qualification level of the professional qualification group, which is extremely important for high-tech organizations that impose higher professional and qualification requirements on the worker;

- third, it will allow to account for the features of the intellectual activity of top and middle management by means of a hierarchical system of integral coefficients, reflecting the level of human capital through the individual labor efforts of the employee;

- fourth, it will allow to consider the level of mastery of the necessary professional knowledge, skills, and abilities in assigning an employee to a certain intellectual and qualification level of the professional qualification group and, depending on this, provide objective and fair differentiation between wage rates;

- fifth, it will give economic substance to the regional component in the remuneration system of top and middle management by integrating the raising coefficients based on intellectual abilities, creative thinking, and personal qualities of the employee;

sixth, it will ensure social justice along with economic feasibility, which is achieved through the degree of differentiation of wages depending on the level of individual labor participation of the organization's staff (Belkin et al., 2018; Hilorme et al., 2020;



Jordão & de Almeida, 2017; Kelchevskaya et al., 2021; Kogut et al., 2020).

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