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Technology of Determining Motivation Reserves for Management Staff

Abstract. In modern crisis conditions, the development and implementation of a mechanism for motivating management staff at enterprise faces a number of complications, the main of which is the lack of financial resources. The purpose of the article is to develop a technology for determining the reserves of motivational influence on the management staff of the enterprise. To achieve this goal, the following methods of scientific research were used: generalization, comparison, analysis and synthesis, the method of expert assessments, the questionnaire method, factor analysis, ranking and the graphic method. Therefore, in order to reduce costs and ensure effective motivation of management staff, it is proposed to identify reserves of motivational influence using the developed technology, which includes methods of factor analysis (identification of latent factors influencing work behavior), assessment of the level of job satisfaction (identification of positions that lag behind the standard) and ranking (arrangement of reserves by degree of influence). The list of motivation factors includes 16 indicators: organizational structuring of work; professional development, acquisition of new knowledge and skills; working conditions; financial incentive (salary and bonuses); power and influence; nature of relations with colleagues; the possibility of success at work; the possibility of career growth; the opportunity to be informed about the company's affairs, to take part in the resolution of cases; recognition and approval of work results; high level of responsibility; the possibility of creative and personal growth; confidence in the future, guarantee of employment, stability; the nature of the relationship with management; level of work control; transparent assessment of work. The application of the proposed technology at PJSC "Kharkivenergozbut" confirmed the possibility and necessity of its use for determining reserves of motivational influence, and therefore, reducing motivation costs, forming an effective mechanism for motivating management staff

Keywords: motivation research, job satisfaction, motivation factors, expert survey

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INTRODUCTION

Numerous studies [1-3] show that Ukrainian enterprises in the energy sector need a significant reform of the staff motivation mechanism. The relevance and urgency of this problem is confirmed by the low level of achievement of economic and social goals of both enterprises and employees. The mechanism of motivation is a complex system, the intervention of which must be substantiated, the effectiveness of the methods must be proven by applied research. It is especially important to properly motivate management staff – managers, employees of the management apparatus, specialists of structural divisions that ensure the smooth functioning and development of enterprises and organizations. A significant obstacle in solving the problem of

motivation is also the fact that most Ukrainian enterprises today have financial problems and are not ready to spend money on motivation. Such a situation is a closed circle, because without managers and specialists who will be interested in the effective functioning of the enterprise in which they work, the enterprise is doomed. Therefore, it is necessary to look for the most important factors of motivation and apply them in the practical activities of staff management.

Recent studies and publications show that motivation does not lose its relevance even now. Many studies raise the issue of determining the essence and improvement of motivation in various organizations and enterprises. Among them, it is possible to note the publications of

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J. Breaugh, A. Ritz, K. Alfes, which study the peculiarities of the motivation of public service [4]; A. Sarandi, L. Kibalnyk, N. Zachosova, who investigate the theoretical aspects of staff motivation management, and the place of motivation in the system of staff policy and staff security [5]; Z.V. Smirnova, O.I. Vaganova, S. Sirotyk, who propose measures to improve the motivation system of service enterprises [6]; I.N. Sycheva, O.Yu. Voronkova, I.V. Kovaleva et al., who analyze the theoretical foundations of the motivation staff of trade enterprises [7].

Researchers also pay considerable attention to motivation factors. L.D. Garmider and L.A. Gonchar list the motivational factors of the productivity of the company's staff and analyze them [8]. Sh. Ritchie and P. Martin suggest managing motivation using 12 motivation factors [9]. J. Taylor, G. Brewer, G. Ripoll, analyzing the motivation of public service, single out four factors of motivation: public-service orientation, legitimacy, merit and support [10]. Some authors offer practical recommendations for creating a motivation system and a staff reward system [11-13].

The conducted analysis allows us to state that there are insufficiently studied and unresolved issues of employee motivation that require further scientific research. Thus, more attention should be paid to the motivation of management staff, whose role in modern conditions has grown significantly. There are practical problems regarding the determination of the most significant factors of motivation, because in order to ensure that funds for motivation are not spent in vain, it is necessary to implement only those methods and means that will be oriented towards meeting the most urgent needs of management staff. That is, it is necessary to determine the reserves of motivational influence on this category of employees.

The purpose of the study is to develop a technology for determining the reserves of motivational influence on the management staff of the enterprise.

MATERIALS AND METHODS

Since motivation is a complex system, which is described mainly by qualitative characteristics, it is proposed to obtain the information necessary for the determination of reserves using the method of expert assessments. This method is a method of obtaining the information, needed by the researcher, from experts, that is, the people who are specialists (professionals) in the field of knowledge, and further processing of this data. According to numerous studies on the application of the method of expert assessments in management [14-16], experts largely compensate for the lack of quantitative information about system elements. And, in addition, their use provides an opportunity:

- carry out an analysis of complex systems, which are mainly characterized by qualitative, informal processes, situations, phenomena;
- carry out an a priori determination and ranking of the most significant factors, that describe the behavior of the system, in relation to the given criterion;

- establish the optimal composition of information that is needed for effective management of objects, including development and decision-making;
- reveal additional subjective information in case of impossibility or difficulty of obtaining objective information;
- increase the effectiveness of mathematical methods by increasing the accuracy of the definition and assessment of qualitative aspects that are inherent in these methods;
- increase the reliability of target functions, which are quantitative or qualitative in nature, by averaging the opinions of highly qualified specialists;
- set initial conditions a priori and quickly adjust them in management systems

In this study it is proposed to use the expert survey scheme proposed in the work [17]. The author proposes the following stages of an expert survey: selection of experts, carrying out of the expert survey procedure, processing of the obtained results. a representative sample of experts

When organizing the survey, care should be taken to form a representative selective group of experts. Their number can be determined in formal or informal ways. Determining the required number of experts in a formal way involves the use of special formulas. In addition to this method, the number of experts is proposed to be chosen arbitrarily from 10 to 20 people, although in some cases their certain increase or decrease is allowed [18].

In this study it is proposed to apply a formal method, determine the number of experts according to the Bernoulli formula [17, p. 219]. Based on this calculation, a sufficient number of experts was determined – 10 people. Since there are methods that allow to determine the number of the expert group with sufficient certainty, the researchers emphasize that all efforts should be spent not on increasing the number of experts, but on staffing the expert group with the most qualified experts. Motivation as an object of research has a number of features, among which the most significant is that it is a component of the employee's personality, and therefore the management staff themselves should act as experts.

The form of obtaining information from experts is a survey. The survey method involves obtaining information in a situation of social and psychological communication. In order to avoid conformity and reduce resource costs (time, human, and financial), a written survey (questionnaire) was conducted. The authors developed a questionnaire that contains a list of questions, ordered by content and form, related to the importance of various motivational factors for staff and their level of satisfaction at the enterprise. It was distributed among managers, employees of the management apparatus and specialists of the divisions of PrJSC "Kharkivenergozbut" (4 women, 6 men). The survey was conducted in December 2021.

The results of the survey were processed by the method of factor analysis using the package of statistical processing of information "STATISTICA", version 10.0. It is proposed to determine the possibilities of motivational influence (reserves) in the sequence shown in Figure 1.

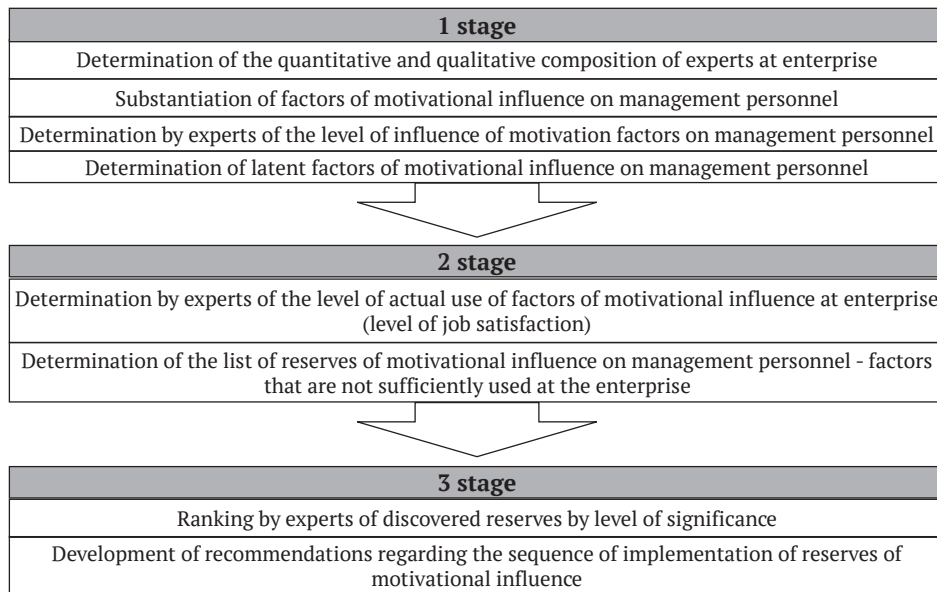


Figure 1. Technology for determining motivation reserves of management staff

The sequential implementation of technology stages (Fig. 1), each of which contains a number of procedures, ensures the achievement of the goal – determination of reserves of motivational influence in the most rational way. Approbation of the proposed technology was carried out on the example of PrJSC “Kharkivenergozbut”.

The assessment of the motivational situation at the enterprise under study is carried out by the method of factor analysis, which helps to assess the loading of factors on each characteristic of motivation.

RESULTS AND DISCUSSIONS

The analysis of works devoted to the study of motivation shows that among researchers there is no unified approach to understanding the factors of motivational influence [8; 9; 11]. The classification of motivation factors by Sh. Ritchie and P. Martin is considered to be the most successful and the one that corresponds to modern

realities [9]. However it is believed that for employees of Ukrainian enterprises, especially those who hold management positions, these factors alone are not enough, therefore, a more extended list of 16 indicators is proposed: F1 – organizational structuring of work; F2 – professional development, acquisition of new knowledge and skills; F3 – working conditions; F4 – material incentive (salary and bonuses); F5 – power and influence; F6 – nature of relations with colleagues; F7 – the possibility of success at work; F8 – the possibility of career growth; F9 – the opportunity to be informed about the company’s affairs, participate in solving cases; F10 – recognition and approval of work results; F11 – high level of responsibility; F12 – the possibility of creative and personal growth; F13 – confidence in the future, guarantee of employment, stability; F14 – the nature of the relationship with management; F15 – work control level; F16 – transparent assessment of work (Fig. 2).

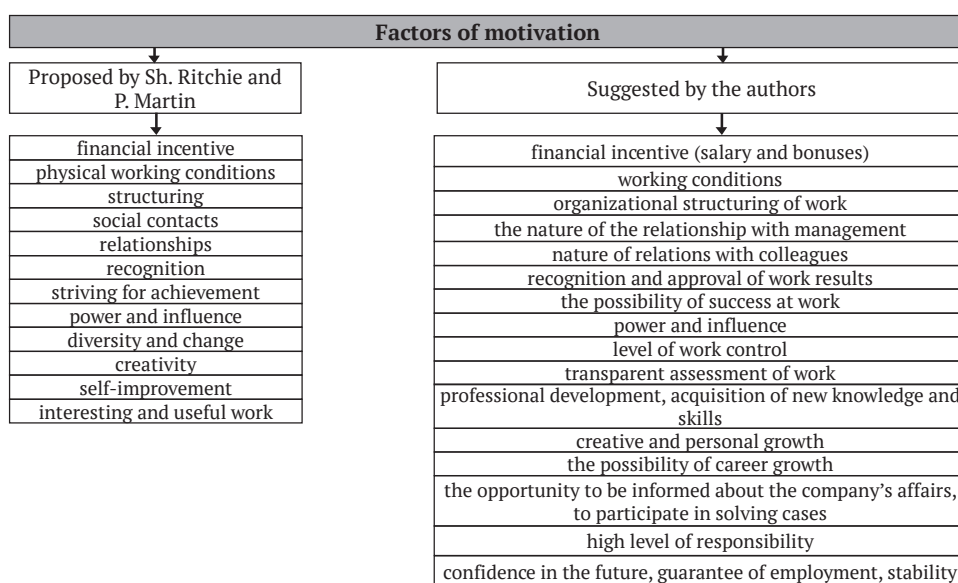


Figure 2. Comparison of the motivation factors of Sh. Ritchie, P. Martin and the author’s list

The motivation factors that stood out at the enterprise have a special set of characteristics for top and middle managers and specialists of the enterprise's structural units.

According to the results of the survey of managers, 3 factors of motivational influence were distinguished with a dispersion of 38.64; 26.2; 12.4 (Table 1).

Table 1. Loading characteristics of the indicators according to the results of the survey of the managers of PJSC "Kharkivenergozbut"

Factors	Dispersion, %	Indicator code	Load
Factor 1	38.6	F4	0.790144
		F10	0.791152
		F11	0.825852
		F12	0.943176
		F15	0.825852
		F16	0.791152
Factor 2	26.2	F5	0.930064
		F6	0.830531
		F14	0.930064
Factor 3	12.4	F1	0.781703
		F2	0.933438

The most significant is the first factor, which describes 38.6% of the variance. It included the following characteristics: material incentive (salary and bonuses), recognition and approval of work results, high level of responsibility, creative and personal growth, level of control over work, transparent evaluation of work. This allows us to interpret it as a component of achievement in work.

The second factor, the level of dispersion of which is 26.2%, includes indicators: management style, nature of

relations with colleagues, nature of relations with management. The structure of this factor allows us to define it as social interaction. The third factor includes indicators: organizational structuring of work, professional development, acquisition of new knowledge and skills. This allows us to interpret it as an intellectual component of motivational influence. As a result of data processing based on the results of a survey of specialists, three factors with a variance of 30.7 were identified; 26.6; 15.6 (Table 2).

Table 2. Load characteristics of indicators according to the results of a survey of specialists of PJSC "Kharkivenergozbut"

Factors	Dispersion, %	Indicator Code	Load
Factor 1	30.7	F4	0.712196
		F5	0.942650
		F6	0.900705
		F14	0.942650
Factor 2	26.6	F10	0.934909
		F11	0.952253
		F15	0.952253
		F16	0.934909
Factor 3	15.6	F1	-0.701765
		F12	0.959017

The first factor is the most influential (explains 30.7% of the total dispersion) and includes the following indicators: salary, management style, nature of relations with colleagues, nature of relations with management. It can be seen that basis of this factor is social indicators, so it can be interpreted as a component of social functioning and consumption.

The second factor reflects managers' desire for justice and includes indicators: recognition and approval of work results, high level of responsibility, level of control over work, transparent assessment of work.

The third factor includes such indicators as organizational structuring of work and the possibility of creative and personal growth, which allows us to interpret it as a component of growth. It should be noted that these

characteristics have opposite effects and they cannot be implemented simultaneously, especially for creativity, which is difficult to tie to a certain schedule and order.

In order for the managers to fully realize their creativity, ability to generate new ideas, find new solutions, it is necessary to implement a more flexible work schedule for such employees, provide freedom of action and the opportunity to acquire new knowledge, acquire new skills and develop personal qualities.

The use of all significant factors of motivation of management staff is an ideal option for influencing the work behavior of this category of staff, but in modern conditions, most engineering enterprises have financial difficulties and are unable to implement it. On the other hand,

ensuring the effective motivation of management staff is an urgent necessity, because only high-quality performance of management functions can lead the enterprise to a new stage of development.

To resolve this contradiction, it is proposed to determine the level of satisfaction with the use of factors of motivational influence at each enterprise. This will allow us to reduce the enterprise's costs for motivation due to the implementation of only those factors that are not sufficiently used at enterprise. To determine the level of use of factors of motivational influence, a program is proposed to assess the level of job satisfaction based on the indicators determined at the first stage.

The importance of job satisfaction in the context of motivation is mentioned in works [4; 19]. The measure of job satisfaction is a subjective assessment by employees of the fulfillment of their requirements regarding the content, character, and working conditions at enterprise. To determine the level of job satisfaction in our study, a rating scale from 1 (insufficient provision) to 5 (good provision) was adopted: completely satisfied – 5 points; satisfied – 4 points; not completely satisfied – 3 points; not satisfied – 2 points; completely dissatisfied – 1 point. The positions that lag behind the standard (5 points) indicate the presence of reserves of motivational influence on employees. Basic reserves (satisfaction level from 1 to 3.4 points) and additional reserves (satisfaction level from 3.5 to 4.4 points) can be distinguished. The second stage of the study gave the following results:

- at the enterprise PJSC “Kharkivenergozbut”, most of the factors of motivational influence determined at the first stage of the research are used and allow meeting the relevant needs of managers;

- there are no motivational factors, the use of which allows to absolutely satisfy the relevant needs of management staff, both for managers and for specialists, that is, they can be defined as additional reserves of motivational influence.

For managers, the main reserves are professional development, acquisition of new knowledge and skills, salary, recognition and approval of work results, transparent assessment of work. Additional reserves are the possibility of creative and personal growth, organizational structuring of work.

For specialists, the main reserves are salary, recognition and approval of work results, high level of responsibility, creative and personal growth, level of control over work, transparent evaluation of work. Additional ones – organizational structuring of work; leadership style; nature of relations with colleagues; nature of relations with management.

In order to determine the level of significance of the discovered reserves, it is necessary to rank them. Let's consider the procedures of the third stage of the proposed

technology. A survey of experts was organized in the form given in the work [15, p. 25], to determine the degree of importance of reserves

The ranking method involves determining the concordance of experts' opinions. For this, it is necessary to calculate the concordance coefficient (W). It is calculated according to the formula proposed by Kendall [20]:

$$W = \frac{12\varepsilon}{N^2(n^3-n)} \quad (1)$$

where ε is the sum of squared deviations of the sum of ranks from their average value; N – number of experts; n is the number of assessment parameters.

A concordance coefficient close to 0 indicates a lack of concordance, and 1 indicates a complete concordance of experts' opinions. For managers, the concordance coefficients were:

- regarding the main reserves of motivational influence:

$$W = \frac{12 \cdot 302}{10^2(4^3-4)} = 0,60 ;$$

- regarding additional ones – $W = \frac{12 \cdot 50}{10^2(2^3-2)} = 1$

For specialists:

- regarding the main reserves of motivational influence

$$W = \frac{12 \cdot 1287}{10^2(6^3-6)} = 0,74 ;$$

- regarding additional ones – $W = \frac{12 \cdot 306}{10^2(4^3-4)} = 0,61.$

The obtained concordance coefficients indicate the existence of consistency of experts' opinions in both cases: both regarding the main reserves of motivational influence and additional ones.

In addition, to assess the significance of the concordance coefficients, the χ^2 [15] criterion was calculated [15]:

$$\chi^2 = N(n-1)W, \quad (2)$$

where W is the concordance coefficient; N – number of experts; n is the number of assessment parameters

For managers:

- regarding the main reserves of motivational influence 18.12 > 11.14;

- regarding additional ones – 10 > 7.38.

For specialists:

- regarding the main reserves of motivational influence 36.77 > 14.45;

- regarding additional ones – 18.36 > 11.14.

The calculated value of χ^2 exceeds the table value, and therefore, the consistency of the experts' conclusions is not accidental. The conducted research allows us to determine the sequence of putting into effect reserves of motivational influence on managers and specialists at enterprise (Figs. 3, 4).

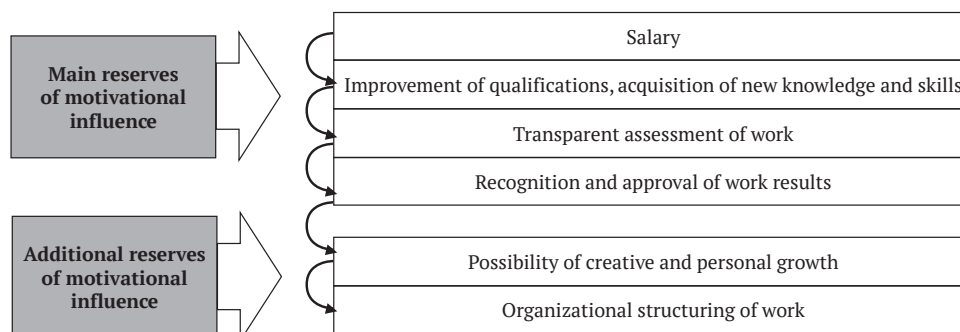


Figure 3. The sequence of putting into effect reserves of motivational influence on managers of PJSC “Kharkivenergozbut”

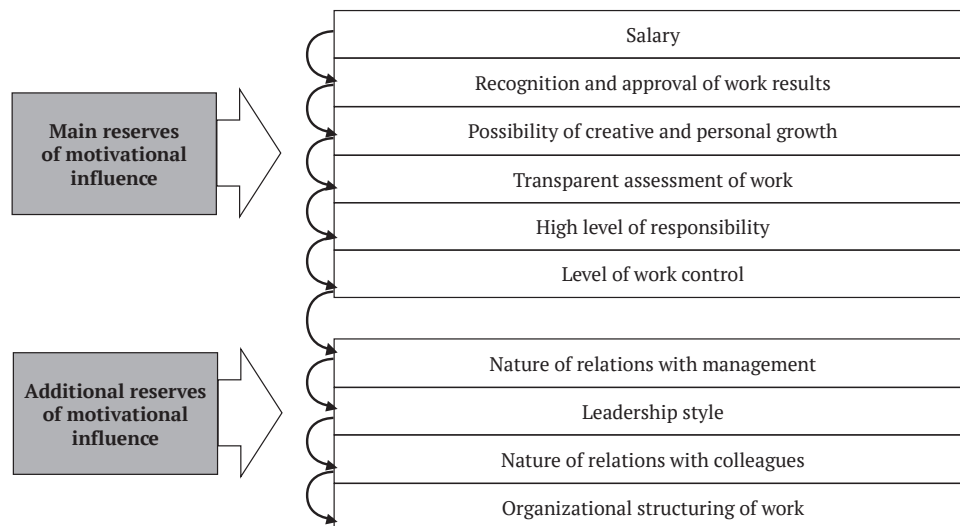


Figure 4. The sequence of putting into effect the reserves of motivational influence on specialists of PJSC “Kharkivenergozbut”

The conducted research allows us to conclude that there are significant differences in the context of problems of motivational influence for different categories of employees at PJSC “Kharkivenergozbut”. Yes, the difference lies both in the number of main influence reserves and in their composition. The same can be said about additional reserves of influence – their number is much lower among management staff. All this actualizes the expediency of an individual approach in the process of motivating employees working at enterprises of the energy complex.

Determining the reserves of motivational influence and successively putting them into effect in compliance with the basic requirements, given in previous studies by the authors [21], allows us to form an effective mechanism for motivating the management staff of the enterprise.

CONCLUSIONS

Thus, the conducted research confirmed the possibility and necessity of using the proposed technology, which includes methods of factor analysis to determine latent factors, which influence work behavior, determine the level of job satisfaction to determine the positions that lag behind the standard and ranking in order to arrange reserves according to the degree of influence to determine reserves of motivational influence. The proposed technology allows us to move from

qualitative assessments of employees’ satisfaction with the existing motivation system at the enterprise under study to its quantitative measurement.

An important result of the conducted research was the determination of a significant difference in motivational preferences among employees of different categories. So, for example, the most significant reserves of motivational influence for management staff have become salaries, professional development, transparent assessment of work, as well as recognition and approval of work results. Additional reserves are the possibility of creative and personal growth, organizational structuring of work. For specialists, a high level of responsibility, a level of control over work and the possibility of creative and personal growth are added to the list of main factors of motivational influence; additional – organizational structuring of work, management style, nature of relations with colleagues, nature of relations with management. This actualizes the possibility of forming individual motivational packages for employees of each category at enterprises of the energy complex. Further research by the authors will be aimed at developing recommendations for the formation of an effective mechanism for motivating management staff at enterprises in the energy industry, taking into account the identified reserves.

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Технологія визначення резервів мотивації управлінського персоналу

Анотація. В сучасних кризових умовах розробка та впровадження механізму мотивації управлінського персоналу на підприємстві стикається з рядом ускладнень, головним з яких є брак фінансових ресурсів. Метою статті є розроблення технології визначення резервів мотиваційного впливу на управлінський персонал підприємства. Для досягнення цієї мети використовувались такі методи наукових досліджень: узагальнення, порівняння, аналіз та синтез, метод експертних оцінок, метод анкетування, факторний аналіз, ранжирування та графічний метод. Тому для скорочення витрат та забезпечення ефективної мотивації управлінського персоналу запропоновано виявляти резерви мотиваційного впливу за допомогою розробленої технології, що включає прийоми факторного аналізу (визначення латентних чинників впливу на трудову поведінку), оцінки рівня задоволеності працею (визначення позицій, за якими є відставання від еталона) та ранжирування (упорядкування резервів за мірою впливу). До переліку чинників мотивації ввійшли 16 показників: організаційне структурування роботи; підвищення кваліфікації, отримання нових знань і навичок; умови праці; матеріальне заохочення (заробітна плата та премії); влада і впливовість; характер відносин з колегами; можливість досягнення успіхів на роботі; можливість кар'єрного росту; можливість бути інформованим про справи фірми, приймати участь у вирішенні справ; визнання і схвалення результатів роботи; високий рівень відповідальності; можливість творчого і особистого зростання; впевненість у майбутньому, гарантія зайнятості, стабільність; характер відносин з керівництвом; рівень контролю за роботою; прозора оцінка праці. Застосування запропонованої технології на ПрАТ "Харківенергозбут" підтвердило можливість і необхідність її використання для визначення резервів мотиваційного впливу, а отже, скорочення витрат на мотивацію, формування ефективного механізму мотивації управлінського персоналу

Ключові слова: дослідження мотивації, задоволеність працею, фактори мотивації, експертне опитування