

ASSESSMENT OF THE MANAGERIAL IMPACT OF THE PERSONNEL MANAGEMENT EFFICIENCY SYSTEM

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Ensuring the efficiency of the enterprise is the main reference point for confidence in its ability to operate in the market in the near future and in the long run. Making a profit as a positive absolute effect from the activities of the entity is a necessary but insufficient condition to ensure its growth and development. Efficiency allows, regardless of the chosen approach to its definition, to assess the relative effect of achieving the goals by using the appropriate set of resources. Thus, this concept is a key tool for evaluation and management, because it is on the basis of quantitative values of efficiency, appropriate decisions must be made in virtually all areas of the enterprise. Understanding the enterprise as a complex system that operates under the constant influence of environmental factors, the definition and evaluation of efficiency should be considered as a complex complex system concept where the appropriate role should be assigned to all subsystems of its internal environment.

A special role among these systems is played by personnel management, as it embodies and integrates all the processes of personnel activities to provide the company with qualified personnel in the required amount, in a timely manner and within the existing budget. The large number of these processes, which is closely interrelated with the functions of management, and the presence of staff in all processes of the enterprise determine the high degree of complexity of personnel management and determine its effectiveness. Based on this, to achieve the goal of clarifying the essence of the concept of personnel management efficiency, it is necessary to clarify the object of study, determine the relationship between personnel management efficiency and enterprise efficiency, outline key human resources processes, improvement of which will increase efficiency, and explore existing staff management tools.

A significant contribution to solving the problem of ensuring the effectiveness of personnel management has been made by domestic and foreign scientists, including M. Armstrong, V. Vesnin, L. Balabanova, N. Gavkalova, B. Genkin, B. Gerasimov, G. Dessler, P. Drucker, O. Yegorshin, L. Kartashova, A. Kibanov, S. Mordovin, Y. Odegov, O. Sardak, D. Torrington, S. Taylor, V. Chumak and others. The issue of improving the efficiency of personnel management as a subsystem of enterprise management has become the object of scientific research by such scientists as O. Amosov, D. Bohynia, N. Verkhohlyadova, O. Grishnova, A. Kolot, M. Semikina, I. Shvets and others. Despite the existing diversity of research in this area, insufficiently disclosed and studied at present are the development of organizational and economic tools to ensure the effectiveness of personnel management and methodological approaches to assessing its level using modern analytical and diagnostic methods to substantiate and model management decisions regarding formation and evaluation of existing and potential opportunities, effective combination and increase of efficiency of use of human resources at the enterprise. Another factor of importance and timeliness of this study is to take into account the regularity of constant adaptation to frequent changes in the external environment to achieve planned business goals, especially in the context of European integration changes that require the formation of appropriate socio-economic standards.

Evaluating the effectiveness of personnel management is an important source for management decisions to improve certain processes of working with staff to increase the level of consistency of the

interaction of the personnel subsystem with other subsystems of the enterprise. As part of the theoretical study, a model for assessing the effectiveness of personnel management was built, which includes two blocks: the first involves evaluating the processes of personnel management that take place in the relevant subsystems, and the second – determining the level of managerial influence on these processes. The overall efficiency of the personnel management system at the enterprise depends on the level of quality of this managerial influence, which determines the need for the implementation of certain measures of organizational and economic support.

We have shown that managerial influence is represented by such functions as: planning, organization, motivation, control and regulation, which affect the processes of personnel management assessed in the previous section. Analysis of existing theoretical developments suggests that such a model for assessing management functions has not yet been built and implemented. Therefore, to obtain a general vision of evaluating the effectiveness of personnel management within this unit, we will focus on assessing the level of managerial influence represented by these functions, presented in Table 1.

Table 1. Functions of managerial influence on personnel management processes

Processes	Management functions
HR-strategy (personnel policy)	HR strategy planning
	Organization of HR strategy implementation
	Motivation to implement HR-strategy
	Monitoring the achievement of HR strategy goals
	Regulation of HR-strategy
Selection, recruitment and hiring	Planning selection, recruitment and employment
	Organization of selection, recruitment and employment
	Motivation for proper selection, recruitment and employment
	Control of selection, recruitment and employment
	Regulation of selection, recruitment and employment
Adaptation	Adaptation planning
	Organization of adaptation
	Motivation for proper adaptation
	Adaptation control
	Regulation of adaptation
Rating	Evaluation planning
	Organization of evaluation
	Motivation for proper evaluation
	Evaluation control
	Adjustment assessment
Movement	Staff movement planning
	Organization of personnel movement
	Motivation for staff movement
	Personnel traffic control
	Regulation of personnel movement
Development	Personnel development planning
	Personnel development organization
	Motivation for staff development
	Personnel development control
	Regulation of personnel development
Remuneration	Staff remuneration planning
	Organization of staff remuneration
	Motivation to reward staff
	Control of staff remuneration
	Staff remuneration regulation

Given that managerial influence depends directly on the entity that exercises it, its level, in contrast to personnel management processes, which were evaluated using quantitative methods, it is advisable to determine using qualitative and quantitative evaluation models, which in most cases involves expert survey.

Expert assessments are qualitative assessments based on non-quantitative information that can be obtained only with the help of experts, which means a highly qualified specialist who relies on his knowledge, experience and intuition and ability to assess individual phenomena and the ability to create their own sound model of the analyzed phenomenon.

We agree with the point of view of researchers [7; 8], that one of the difficult aspects of quality assessment by experts is the ability to provide a clear vision of the level of implementation of these functions of personnel management processes. That is why we propose to evaluate those provided in Table 2 functions by linguistic characteristics, represented by a set of definitions of «high, medium, low» level. As a result of the evaluation, these qualitative characteristics should be translated into quantitative values to determine the consistency of expert opinions, and using fuzzy set theory by generalizing a qualitative assessment of planning, organizing, motivating, controlling and regulating functions for each personnel management process. control of this subsystem with the corresponding quantitative equivalent.

Uncertainty in estimating the level of implementation of the control function is taken into account in the framework of fuzzy set theory and fuzzy logic, which are a generalization of the classical set theory Fuzzy sets and the classical formal logic Fuzzy Logic. Fuzzy set theory was introduced in 1965 by Professor Lotfi Zade. The peculiarity of this method is the introduction of linguistic variables as subjective categories, which means such changes that can not be described in mathematical language, ie it is difficult to give an accurate objective quantitative estimate [4]. That is, given the individuality of the level of management of personnel management processes in each company, the same state of affairs can be assessed by different experts using different linguistic meanings.

Given the provisions of the theory of fuzzy sets, we propose our own model for evaluating the quality of personnel management process management functions.

To determine the overall assessment, it is necessary to obtain values for each of the 7 personnel management processes, each of which is described by 5 management functions. This involves the evaluation by experts of these functions in each process using a scale, the values of which will be used in the fuzzy set model to determine the probability of assigning its value to the three above linguistic terms: «high», «medium» and «low» to obtain a point definition of each personnel management process as a source variable for the researched enterprise, taking into account the probability of assigning its value to each of the terms, taking into account the number of experts involved in the evaluation.

To conduct an assessment, it is necessary to determine the company. Given that previous studies have evaluated 11 machine-building enterprises, it is advisable to group them to obtain more homogeneous populations and determine the representative, as conducting surveys at all enterprises is a time-consuming task, and the development of recommendations should be universal, given the average performance of enterprises.

The most common methods of determining enterprise groups is cluster analysis, which also refers to data reduction methods, which allows to obtain groups (clusters) of enterprises without prior classification [9]. There are a number of methods of cluster analysis, in the environment of the program STATISTICA Version 10 it is possible to conduct it in three: tree, k-means method and two-input integration. A detailed description of enterprise groups to determine the influence of factors on the distribution can be obtained by the method of k-means, but it requires a preliminary determination of the number of clusters that can be obtained from the implementation of tree clustering.

Given that at the initial stage the number of clusters is unknown, it is advisable to implement the method of tree clustering. Using the calculated values of integrated coefficients for personnel management processes, the grouping of enterprises was carried out. Enterprises were divided into 3 groups, which allows you to use this grouping in the method of k-means.

According to the results of the analysis, the following conclusions can be drawn: enterprises differed the most in the efficiency of selection, recruitment and hiring, to a much lesser extent in the

efficiency of movement, development and adaptation. The enterprises do not differ in other processes, which indicates a similar level of integrated indicators.

To obtain a more detailed vision of the average values, we present the average value for those processes that have a statistically significant impact on the distribution of enterprises (Fig. 1). To obtain comparable data, the integral values of the processes used in cluster analysis should be divided into groups by qualitative levels. Since the integral values were calculated using a modified algorithm for determining the taxonomic index, the closer the indicator to «1», the higher its level. To do this, use the Harrington method and select similar groups as for the evaluation of control functions:

«High» corresponds to the range of values: [1, 67];

«Average» corresponds to the range of values: (67, 34];

«Low» corresponds to the range of values: (34, 0].

The first cluster includes enterprises with an average level of efficiency of selection, recruitment and employment, adaptation, movement and development.

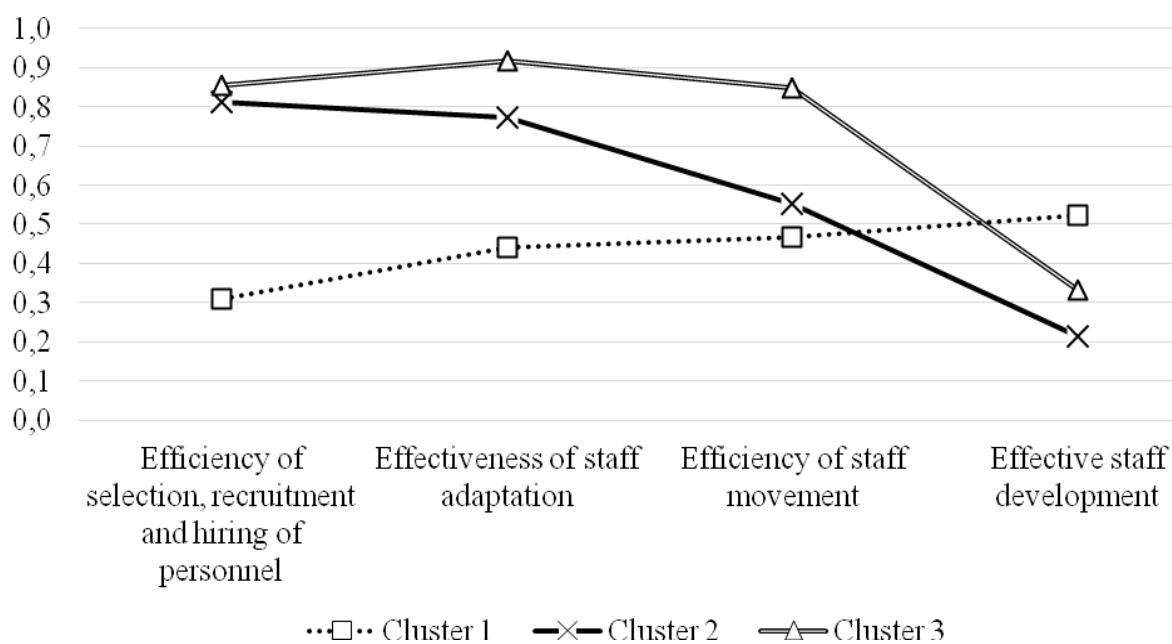


Figure 1. Average values of personnel management processes at the surveyed enterprises by clusters by significant processes

The second cluster includes enterprises with a high level of efficiency of selection, recruitment and employment, adaptation, medium level of movement and low value of development. The third cluster is characterized by high efficiency of the processes of selection, recruitment and employment, adaptation and movement, but a low level of development. The evaluation results are presented in Table 2.

Thus, on the basis of the study, the levels of management of personnel management processes for each of the clusters of the studied enterprises were determined on the basis of an expert survey of employees of the representative enterprises. In the Table 2 presents the results that allow to compare the obtained level of management with the value of the effectiveness of the studied processes. As you can see, the values completely coincide only in the first cluster of the enterprise, which reflects the harmony between the managerial influence on the processes of personnel management and their level of efficiency. Given that the value of the level of efficiency of personnel management processes depends on the functioning of the enterprise, the correspondence between the obtained levels also indicates the consistency of personnel management with the overall management of the enterprise. Since the bottleneck for this cluster is the remuneration of staff, it is necessary to implement measures to improve both the management of this process and increase its efficiency.

Table 2. Average values of integrated indicators of enterprises and levels of management of personnel management processes in the studied enterprises

Clusters Processes	The value of process efficiency			The level of their management		
	1st cluster	2nd cluster	3rd cluster	1st cluster	2nd cluster	3rd cluster
HR-strategy (personnel policy)	average	low	average	average	low	low
Selection, recruitment and hiring of personnel	average	low	high	average	average	average
Staff adaptation	average	low	high	average	average	average
Staff evaluation	high	average	low	high	average	average
Staff movement	high	low	average	high	low	low
Development staff	average	low	average	average	low	average
Remuneration of staff	low	low	average	low	low	average

First of all, it is necessary to revise the remuneration system as a whole, which provides, first, for the development of a plan for a gradual increase in wages, the rate of which should exceed the existing rate of inflation and rising prices in the country. Second, according to the level of efficiency of staff remuneration, wage growth should be compared with the growth of labor productivity, as well as the dynamics of wages in the industry. Given the relatively high level of automation and computerization of production processes, productivity growth depends primarily on improving its organization and the introduction of innovations, the source of which should be the synthesized capital of the enterprise. Thirdly, it is expedient to pay attention to social security of employees and cultural and household services, which should be more closely interconnected with the system of remuneration and recognition of personnel in the enterprises of the first cluster. The average level of HR strategy management is due to its imperfect planning, motivation and regulation. To improve the results of this process of personnel management, management should pay more attention to the development of personnel management goals, ensuring consistency between achieving these goals and the system of personnel remuneration, as well as developing rules for adjusting HR strategy depending on changes in business strategy and competitive strategy. The issue of compliance with labor discipline at the enterprises of this cluster should be reflected in the code of ethics, compliance with which should be defined as one of the main goals of HR-strategy. Since the organization received the highest level of all management functions, the staffing of the HR department should be considered mainly in quantitative terms, which requires a review of the actual number of this department in accordance with the complexity of their activities, given the scope of functions. In order to increase the efficiency of selection, recruitment and hiring, as well as the level of management of this process, it is advisable to establish compliance between the implementation of the recruitment plan and the system of remuneration for the implementation of this plan, improve the procedure for allocating time, resources and increase the number of procedures for monitoring the level of staffing, as well as implement procedures to amend the recruitment plan in accordance with the current needs of the enterprise. Regarding the process of personnel adaptation, based on the obtained results, the motivation function is carried out at the highest level among all others. Based on this, it is necessary to pay attention to the definition of those responsible for mentoring, specifying the specific timing of adaptation for each position, which will increase both the adaptation rate and the probationary period, and ensure overall efficiency of the staff adaptation process. In order to increase the share of newcomers who have been working for more than one year from the number of those admitted within two years, it is necessary to introduce a procedure for assessing their productivity with appropriate adjustments. Regarding the processes of personnel development to increase their efficiency and level of management, first of all, it is necessary to increase funding for staff development, because they are the carrier and source of synthesized capital, which provides the company with stable competitive advantages in the market. It is advisable to expand the interaction of enterprises of the first cluster with higher education institutions in the region, especially in terms of training in the field of information technology and process automation. Acquiring such fundamental and applied knowledge by employees will increase the level of computerization of processes, which will help to reduce both the cost of production and improve its

quality. As part of this process, it is necessary to improve the system of incentives to train staff by expanding existing methods of remuneration. Regarding the control of personnel development, this function has received the lowest value in this process, which indicates the need to develop a procedure for evaluating alternatives to human resources development within the enterprise or third parties.

The analysis of the enterprises of the second cluster allowed to determine that the efficiency of virtually all processes except personnel evaluation is low. Management functions were also assessed by experts as mostly unsatisfactory, except for the processes of evaluation, adaptation, selection, recruitment and hiring, which received an average level. The enterprises of this cluster, first of all, need to completely revise the existing HR-strategy, develop and agree on the goals of personnel management, metrics for their achievement and develop an implementation plan in compliance with the requirements for the use of resources and improve the existing code of ethics. In addition, it is necessary to review the existing number of HR-department staff and distribute the responsibility among its employees for the performance of functions. The low level of efficiency of selection, recruitment and hiring of personnel at the average level of management of this subsystem requires a review of the number of unfilled vacancies and staffing of the enterprise. To implement the necessary measures, it is advisable to analyze the reasons for non-implementation of the staffing plan and review the distribution of responsibilities between HR staff to ensure the implementation of this process in enterprises. Since the effectiveness of adaptation are most directly dependent on management, for improving the efficiency of the process necessary to implement these same measures, and as recommended above for the first cluster. Evaluation of staff – the only process that has average efficiency and management. To improve this process, it is advisable to take into account in the remuneration system indicators of staff evaluation both by professional level and qualification level, and by the results achieved. It is also important to pay attention to the analysis of duplication of employee functions to reduce losses from inefficient use of time by management staff. Improvement requires control of evaluation, which is the need to implement procedures to determine the appropriateness of the costs of its implementation and to compare the results of the evaluation with the positions held by employees and the performance of employees. Regarding the movement of personnel, the enterprises of the second cluster should focus on improving the organization of jobs, forming a personnel reserve, developing a career plan for all management positions and implementing a rotation system, set priorities for promoting their employees alongside external and reducing part-time. With regard to staff development, in order to increase both the level of efficiency and the level of management, it is advisable to increase funding, as well as the enterprises of the first cluster, and to establish a direct link between the level of skills and wages in the enterprise. The low level of efficiency and remuneration management requires the implementation of the same measures as recommended above for the enterprises of the first cluster.

The third cluster of the studied enterprises differs in a lower level than the first, but higher than the second cluster in terms of the efficiency of processes and the level of their management. According to HR-strategy, the level of its management is lower than the effectiveness of this process, which indicates the need to pay attention to the development of personnel management goals, metrics to achieve it and assess the effectiveness of their implementation, HR-strategy as a whole in accordance with current business strategy and competitive strategy. schedule of its implementation with the allocation of necessary resources. The selection, recruitment and hiring of staff is at a high level, and in its management there is a bottleneck of motivation, which requires the inclusion in the system of remuneration of HR-staff implementation of the recruitment plan. The high level of efficiency of personnel adaptation in this group of enterprises requires the improvement of management of the regulatory function, which is at a very low level compared to others. Motivation is also imperfect. Therefore, it is worth increasing the amount of remuneration for mentors and reviewing the existing adaptation procedures for new employees, taking into account the current development goals of the enterprise. The only process that has a low level of efficiency in this cluster is staff appraisal, despite the average level of management of this process. This requires increasing the number of certified employees, reviewing the positions held by employees in accordance with their tariff category, conducting a detailed analysis of management activities to avoid duplication of functions, determining the reasons for non-compliance with the staff evaluation plan. The opposite situation with the

movement of staff: with a satisfactory level of staff turnover, organization of jobs, closing positions by internal candidates, the company lacks a personnel reserve, career plan, staff rotation, remuneration growth according to the complexity of the functions of the position. To eliminate these shortcomings, it is necessary to pay attention to the HR department to improve personnel management. The process of staff development in the third cluster received the same estimates as in the first, which allows us to offer the same recommendations. As a result of staff remuneration, only in this cluster, in contrast to the previous two, a satisfactory level of efficiency of both the process and its management was obtained. To improve the situation, it is advisable to implement changes in the remuneration system in accordance with the results of evaluation, movement and development of personnel, as well as taking into account the implementation of the remuneration plan.

All the proposed measures for the considered clusters of the studied enterprises require appropriate organizational and economic support, the rationale for which is discussed in detail in the next section.

Within the framework of the proposed model for evaluating the effectiveness of personnel management, an analysis of the managerial impact on the processes of personnel management was carried out on the example of the studied enterprises. The analysis was performed using expert evaluation by constructing a fuzzy inference model using MatLab as part of the Fuzzy Logic Toolbox. Experts were asked to evaluate the management functions (planning, organization, motivation, control and regulation) for processes (HR strategy, selection, recruitment, adaptation, evaluation, movement, staff development and remuneration) by assigning a score from 0 to 100. The consistency of the experts' opinions was proved on the basis of the calculation of the coefficient of variation of the score for each function of each personnel management process. Using the rules of the fuzzy inference system, the overall level of management of each of the processes for the representative enterprises obtained by calculating the minimum distance between the enterprises included in the clusters was estimated. The clusters were formed on the basis of a preliminary determination of the level of efficiency of each of the processes, which allowed to combine enterprises with similar averages for each of the processes of personnel management. By comparing the importance of process efficiency for selected representative companies and the level of their management, a set of recommendations for improving the efficiency of personnel management was developed.

References

1. Grigan, A. M. (2009). *Upravlencheskaja diagnostika: teorija i praktika: monografija*. Rostov n/D: Izd-vo RSJeI. [in Russian].
2. Evlanov, L., Kutuzov, V. (1978). *Jekspertnye ocenki v upravlenii*. M.: Jekonomika. [in Russian].
3. Litvak, B. G. (1996). *Jekspertnye ocenki i prinjatje reshenij*. M.: Patent. [in Russian].
4. Mahovikova, G. A., Kas'janenko, T. G. (2014). *Analiz i ocenka riskov v biznese: uchebnik i praktikum dlja akademicheskogo bakalavriata*. M.: Izdatel'stvo Jurajt. [in Russian].
5. Mishin, V. M. (2015). *Issledovanie sistem upravlenija. Uchebnik dlja VUZov*. M.: Juniti-DANA. [in Russian].
6. Pljuta, V. (1980). *Sravnitel'nyj mnogomernyj analiz v jekonomicheskikh issledovanijah: Metody taksonomii i faktornogo analiza*. M.: Statistika. [in Russian].
7. Seliverstov, R. H. (2008). *Elements of the theory of fuzzy sets as a means of professionalization of expert activity in public administration. Efficiency of public administration: collection of academic papers of Lviv Regional Institute of Public Administration of National Academy of Public Administration office of the President of Ukraine*. ed. by corresponding member V. Zahorskyi, associated professor A. Lipentsev. Lviv : Publisher LRIPA NAPA. 16/17. 372-376. [in Ukrainian].
8. Syniavs'ka, O. O. (2016). *Methods and models of evaluation of service quality banks*. PhD thesis. Classical Private University. [in Ukrainian].
9. Halafjan, A. A. (2007). *STATISTICA 6. Statisticheskij analiz dannyh: uchebnik*. M.: OOO «Binom-Press». [in Russian].
10. Shtovba, S. D. (2003). *Vvedenie v teoriju nechetkih mnozhestv i nechetkiju logiku: Monografija*. Vinnica: Kontinent-Prim. [in Russian].