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**INNOVATIVE ACTIVITY UNDER THE INFLUENCE OF THE LABOR POTENTIAL OF THE ENTERPRISE**

**Abstract.** The article substantiates the importance of innovative activity and the influence of the enterprise's labor potential on it. The relevance of the research topic is due to the need to optimize the work of Ukrainian enterprises due to the management of their labor potential, taking into account the innovative component and regional characteristics. The methodological basis of the study was system-process approaches to the study of the problem of formation and management of labor potential and its influence on the results of innovative activity of the enterprise. Labor potential is considered by the author as the existing and projected labor capabilities of or employee, enterprise, region, a country; a set of social, demographic, intellectual, spiritual, and other characteristics of the working population or an individual employee, which can be embodied in the process of work. It has been proven that the labor potential affects the innovative development of the enterprise, providing conditions for creating opportunities for the progress of innovations in various spheres of its activity and their further implementation; accelerating the transformation of innovation into innovation, etc. A model of multiple regression of the average annual labor productivity of one employee of the enterprise has been built, which makes it possible to more effectively go through each stage of the development of management solutions in the field of personnel work. The assessment of the influence of indicators of the labor potential state on the results of innovative activity of the enterprise confirms the dependence of the
average annual output per employee on the quality indicators of the labor potential state. An algorithm for optimizing the process of making managerial decisions to improve labor potential is proposed. The model of multiple regression of average annual labor productivity is adapted to the existing economic conditions, through which it is possible to optimize the procedure for making managerial decisions in the field of work with the personnel of an innovative enterprise. It is noted that all of the above will contribute to the achievement of the goal and implementation of the strategic objectives of the enterprise.

**Keywords:** innovations, innovative activity, personnel, enterprise, labor potential.

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ІННОВАЦІЙНА ДІЯЛЬНІСТЬ ПІД ВПЛИВОМ ТРУДОВОГО ПОТЕНЦІАЛУ ПІДПРИЄМСТВА

Анотація. У статті обґрунтовано важливість інноваційної діяльності та вплив на неї трудового потенціалу підприємства. Актуальність теми дослідження зумовлена необхідністю оптимізації роботи українських підприємств за рахунок управління їх трудовим потенціалом з урахуванням інноваційної складової та регіональних особливостей. Методологічною основою дослідження стали системно-процесні підходи до дослідження проблем управління та формування трудовим потенціалом та його впливу на результати інноваційної діяльності суб’єкту господарювання. Трудовий потенціал розглядається авторами як прогнозовані та наявні трудові можливості працівника, підприємства, регіону, країни; сукупність соціальних, демографічних, інтелектуальних, духовних та інших характеристик працівника, які можуть втілюватися в процесі праці. Доведено, що трудовий потенціал впливає на інноваційний розвиток підприємства, забезпечуючи
умови для створення можливостей для прогресу інновацій у різних сферах його діяльності та їх подальшого впровадження; прискорення трансформації інновації в інновацію тощо. Авторами побудовано модель множинної регресії середньорічної продуктивності праці одного працівника підприємства, що дозволяє більш ефективно проходити кожен етап розробки управлінських рішень у сфері кадрової роботи. Оцінка впливу показників стану трудового потенціалу на результати інноваційної діяльності підприємства підтверджує залежність середньорічного виробітку на одного працівника підприємства від якісних показників стану трудового потенціалу. Запропоновано алгоритм оптимізації процесу прийняття управлінських рішень щодо підвищення трудового потенціалу. До існуючих економічних умов адаптовано модель множинної регресії середньорічної продуктивності праці, за допомогою якої можна оптимізувати процедуру прийняття управлінських рішень у сфері роботи з персоналом інноваційного підприємства. Зазначається, що все вищезазначене сприятиме досягненню мети та реалізації стратегічних завдань підприємства.

Ключові слова: інновації, інноваційна діяльність, персонал, підприємство, трудовий потенціал.

**Formulation of the problem.** The relevance of the research topic is due to the need to optimize the work of Ukrainian enterprises due to the management of their labor potential, taking into account the innovative component and regional characteristics. After all, in the conditions of the formation of market relations in Ukraine and the global innovative development of foreign countries, the socio-economic development of enterprises in all branches of the national economy is impossible without the development of science and technology, the introduction of innovative management mechanisms, modernization and improvement of production, and the improvement of the intellectual potential of employees.

It is obvious that the success of the economic and innovative development of the country and regions is impossible without the formation of the most important strategic resource - innovation-oriented personnel capable of flexibly responding to changes occurring in the external environment and prone to innovative thinking.

The main reason for the insufficiently high level of development of innovative labor potential, as practice shows, is an ineffective management system for the processes of its formation and development, as well as the inability and unpreparedness of labor personnel to work in modern conditions.

**Analysis of recent research and publications.** This topic is studied by many domestic and foreign scientists. Considerable attention was paid to the issues of innovative activity of enterprises in the works of such economists as: Hnatenko I., Orlova-Kurilova O., Shtuler I., Serzhanov V., Rubezhanska V. [1], Zhang H., Veltri A., Calvo- Amodio J., Haapala K. [2], Alekseenko V., Seredina N., Kosainova V. [3] and others.
So, Zhang H., Veltri A. and others [2] define the new economy as an economy associated with the intensive implementation of innovations and new ways of doing business, which affect the growth of labor productivity.

A certain behavioral type is characteristic of the innovative economy. Alekseenko V., Seredina N., and Kosainova V. believe that an innovative economy is possible only by building a new type of science [3]. Brochkova K. and others note that the innovative economy is a dynamic economy that is able to quickly and flexibly adapt to changing internal and external conditions [4]. The mentioned authors defined the role of innovation as a leading factor of economic growth, developed a conceptual apparatus, and identified the main cause-and-effect relationships in this field of activity.

Problems of labor potential are also in the center of attention of many scientists. The author of the article analyzed the most significant research approaches to the study of the impact of labor potential on the results of innovative activity of the enterprise. Thus, theoretical and methodological principles and practical aspects of the formation, development and use of labor potential were studied by: Zos-Kior M., Semenyuta M. [5], Markina I. [6], Byvsheva L., Kondratenko O., Zheldak S., A. Kovalenchenko [7] and others. The determination of the structure of the labor potential, the assessment of its use in the process of labor activity were highlighted in their works by such domestic scientists as: Halych O., Vakulenko Yu., Tereshchenko I., Krutko T. [8], Hrynkevich S., Brukh O., Kogut M. [9] and others.

The approaches of scientists in the study of the dependence between the state of the labor potential and the results of the enterprise are based, in most cases, on the use of one of the financial indicators as a resulting factor, none of which, in our opinion, fully reflects the contribution of personnel to the effectiveness of operation. Thus, the application of scientific and methodological tools for predicting the rationality of management decision-making needs further development. That is why the main goal of enterprises today is to determine trends in the influence of indicators of labor potential on performance results, including innovative.

**Forming the goals of the article.** The purpose of this article is to substantiate the direct impact of the labor potential on the results of the innovative activity of the business entity with further development of adaptation measures.

**Presentation of the main research material.** The effectiveness of the functioning of the enterprise as a component of the socio-economic system depends on exogenous and endogenous influencing factors [10]. The main indicator of internal (endogenous) factors - the labor potential of the enterprise - is characterized by indicators of the quantitative composition, indicators of the efficiency of the use of personnel, indicators of the efficiency of the use of working time, indicators of the movement and structure of personnel. These indicators directly affect the results of the enterprise's functioning, since all production and non-production processes at
the enterprise are controlled and performed by the direct bearers of labor potential - employees of various categories. That is why there is a need to develop a toolkit for determining the effectiveness of investing in working conditions that improve the human factor of production, which, in turn, will allow optimizing the process of making rational management decisions.

External (exogenous) factors include market conditions, changes in its structure, R&D, state economic policy, and even tariff agreements. These indicators directly significantly affect the sales markets of manufactured products, which, in turn, causes changes in the amount of profit received.

Endogenous and exogenous factors are interconnected, because changes in the organization are a consequence of changes occurring in the world. The sources of these changes can be both in the organization itself and in the external environment. The state adopts new laws that every organization is obliged to comply with. New technologies require the transition to the production of new types of products, and this, in turn, may cause the need for a new organizational structure, retraining of personnel, etc. In connection with the influence of innovations on the potential of personnel, the question arises regarding its quality.

We believe that the impact of indicators of labor potential on the results of the company's activity should be investigated using the methods of multivariate statistical analysis, namely correlation-regression analysis. Correlation analysis allows you to statistically compare indicators and allows you to examine the closeness of their relationship. This contributes to the exclusion of interrelated data from subsequent studies and thus helps to objectively construct a multiple regression relationship.

A positive aspect of using regression analysis in the study of economic phenomena and processes is, first, the possibility of establishing the trends of the external and internal environment inherent in them, the interrelationships of indicators of their state and development. That is, regression analysis offers a toolkit for determining factors that directly affect the studied phenomena.

Labor potential - existing and projected future labor opportunities of the country, region, enterprise or employee; a set of demographic, social, spiritual, intellectual and other characteristics of the working population or an individual worker that can be embodied in the work process.

To measure the quality of labor potential, scientists [10, 11, 12] distinguish the following groups of parameters:
- socio-demographic (gender, age, level of education, state of health, marital status);
- production and qualification (professional training, skills, work experience);
- psychological (personal characteristics, creative potential, attitude to work).

When determining the essence and indicators of assessing the level and efficiency of the use of labor potential, it is necessary, in our opinion, to highlight the following provisions:
1. The essence of labor potential is determined by the indicator and methods of assessing its level.
2. Labor potential is an element of production potential.
3. To distinguish three levels of assessment of labor potential: human potential; potential of the enterprise (industry); potential of society (region).
4. The level of labor potential should be determined by the following factors: professional training, physical health, socio-demographic composition of the population, its intellectual and cultural level; motivation of work, social tension of work, etc. In essence, qualitative assessment can be reduced to the identification of factors of productive labor force (intensive factors).
5. Labor potential should be perceived as a public socio-economic category (labor mentality).
6. As a result of production use, the potential level of labor must be transformed into its real level.

As for the enterprise, the labor potential is the limit value of the possible participation of employees in production, taking into account their psychophysiological characteristics, the level of professional knowledge, accumulated experience in the presence of the necessary organizational and technical conditions [13, 14].

The labor potential of the enterprise as a system is always greater than the sum of its constituent parts - the individual labor potentials of individual employees. It is the unification of workers in a single and systematically organized work process that generates the effect of collective work, which exceeds the sum of the forces of workers acting individually.

Thus, if the totality of a person's physical and spiritual abilities is the basis of an individual's work potential, then the productive force that arises due to the joint activity of various individuals is the basis of the work potential of the company's team. At the same time, it is necessary to take into account that labor teams have different potentials depending on the territorial location of the enterprise, branch affiliation, production size, gender-age structure, etc. In addition, each enterprise has its own peculiarities of team formation, labor traditions, and relations between employees.

The structure of the labor potential of the enterprise is a ratio of various demographic, social, functional, professional and other characteristics of groups of employees and the relationship between them [15].

In the diagnostic approach, the analysis and diagnosis of the impact of the labor potential on the innovative activity of the enterprise is carried out according to a limited range of parameters, since this is due to the limitation of terms, the lack of specialists who are able to conduct a system analysis, and the unavailability of the necessary information both regarding one's own enterprise and competitors. Here, as a diagnosed element, "frames" act. The condition of this element can be used to
diagnose the condition of the innovator's system in general. Input and output parameters are diagnosed. Input parameters include: the number of employees; the number of specialists who have a degree; salary expenses, etc. The initial parameters include: duration of work; level and quality of products, services, projects; costs for performance of works; dismissal and transfer of employees; scope of works, etc.

As diagnostic parameters, you can use integral parameters of the efficiency of resource use: the ratio of input parameters to output parameters (for example, labor productivity, production cost). All integral indicators are relative.

One of the resulting labor indicators of the activity of the entire enterprise is the average annual output per employee. It is influenced by the level of time productivity and the efficiency of using working time.

The average annual production per employee can be considered as an indicator of the efficiency of the enterprise, which allows to assess the contribution of the enterprise's personnel to the overall result of its activity. Determining the effectiveness of functioning consists in comparing the results (or resources) with the costs that ensured this result. Generally accepted indicators characterizing the successful operation of the enterprise are profitability, the amount of net profit, the value assessment of the trademark or brand, the level of investment attractiveness, indicators of the efficiency of the use of various types of enterprise resources: labor, financial, material, etc. However, none of them allows to estimate the size of the contribution to the results of the enterprise, made by its employees.

The model of multiple regression of the average annual labor productivity of one employee of the enterprise can be presented in the following form:

\[ Y = X_1 \times X_2 \times X_3 \times X_4 \]

where: \( X_1 \) is the specific weight of workers in the total average number of industrial and production personnel;
\( X_2 \) – average annual length of days worked by one employee;
\( X_3 \) – average annual length of working day;
\( X_4 \) – average hourly output of one worker.

The constructed regression model can be used in the practical activities of industrial enterprises, as it allows each stage of the development of managerial decisions in the field of personnel work to be more effectively completed - preparation, adoption and implementation (Fig. 1).
Fig. 1 Algorithm for optimizing the management decision process

In Block 1, a circle of alternative solutions to the problem is formed. Solutions are offered after a careful study of the factors of the internal and external environment of the enterprise, the availability of financial, labor, information, technical and technological resources. At this stage, the regression model will make it possible to predict the possible return of the invested funds and estimate the amount of increase in the volume of production as a result of the implementation of the developed innovative measures to increase the labor potential.

Block 2 provides for the development and implementation of a set of measures to increase the average annual production per employee, based on the selected alternatives.
Unit 3 evaluates the results of management decisions on increasing the level of indicators of the efficiency of the use of the enterprise's labor potential.

If an unsatisfactory result is obtained during the comparison of calculated indicators with primary ones, it is necessary to return to Block 1 and resume similar work.

Measures to increase the level of average annual income per employee, depending on the categories, goals, aspirations, benefits and indicators affecting labor productivity, can be divided into the following directions:

– helping to reduce staff turnover;
– involvement of personnel in self-development, both intellectually and physically;
– maintaining the appropriate level of labor discipline.

We offer to single out the most effective recommendations for reducing staff turnover at an innovative enterprise:

– the expediency of drawing up a plan for the development of the employee's competencies corresponding to the position;
– formation of necessary competencies in various areas: planning, communications, human resources management, etc.;
– accounting of personal qualities - emotional characteristics, creativity and innovative worldviews;
– the existing skills of employees are important, but the prospects for their development and improvement are more significant.

Taking into account the instability of the economic and political state of the country, it is necessary, in our opinion, to carry out measures to increase the productivity of personnel by the following methods (Table 1):

<table>
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<th>Activities</th>
<th>Characteristics of activities</th>
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<tr>
<td>Moderate staff rotation</td>
<td>Conducting cross-training will allow employees to: 1) acquire new knowledge and skills; 2) study technological processes; 3) better understand the activities of the structural division, as well as the business processes that take place in it</td>
</tr>
<tr>
<td>Regular holding of thematic forums with company employees</td>
<td>Holding forums on topical issues will allow: 1) promptly resolve the issues that arise; 2) answer questions; 3) propose ways to solve production situations; 4) to establish informal connections, this will allow to form the loyalty and commitment of employees to the enterprise</td>
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*Table 1.*
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<tr>
<th>Conducting open seminars by employees of various structural units</th>
<th>Conducting short open seminars prepared by employees of one or another department of the enterprise with the aim of familiarizing other employees with the main characteristics of their work, processes that are performed regularly. This will contribute to the understanding of the causes of possible destabilizing processes</th>
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<tr>
<td>Carrying out mutual training</td>
<td>It is appropriate to use mutual training of personnel in cases where employees perform similar tasks, but there is a need to master new knowledge in technological processes</td>
</tr>
<tr>
<td>Temporary exchange of specialists</td>
<td>Mutual exchange will allow to study mistakes during the introduction of innovations in order to avoid them in the future, as well as to learn from the experience of enterprises working in the same field</td>
</tr>
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Education and training programs contribute to the development of personnel, but their use in the specified conditions has some limitations of a financial and social nature.

**Conclusions.** The assessment of the influence of indicators of the state of labor potential on the results of innovative activity of the enterprise confirms the dependence of the average annual output of one employee on qualitative indicators of the state of labor potential.

As a result of the study, an algorithm for optimizing the process of making managerial decisions regarding the improvement of labor potential was proposed. A number of practically valuable measures to increase the level of output per worker are presented. The model of multiple regression of average annual labor productivity has been adapted to the existing economic conditions, which can be used to optimize the procedure for making managerial decisions in the field of working with the personnel of an innovative enterprise.

Increasing the level of efficiency of using the innovative potential of the enterprise as a whole system for the development of the enterprise can be carried out only thanks to the development of its other system-forming potentials. The availability of financial resources, the technical base, the necessary scientific potential, the development of technological infrastructure, a high level of product quality, meeting the needs of the market, and the availability of both material and non-material reserves is a direct condition for the effective socio-economic development of domestic enterprises.

Socio-economic development and innovative processes of the enterprise are inseparable components of its achievement of effective economic activity and the formation of competitiveness.

The innovative capabilities of the enterprise and its innovative potential are the core of the development of the entire potential of the enterprise. Therefore, for successful innovative activity and comprehensive socio-economic development of enterprises of any branch of the domestic economy, certain conditions are necessary...
under which innovative potential should be used as efficiently as possible. This requires constant renewal and transformation from enterprises, the ability to perceive and implement innovations, and increase the efficiency of innovation processes. In total, the above will contribute to the achievement of the goal and the realization of a set of strategic goals of the enterprise.

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Література:


