PRODUCTION ENGINEERING ARCHIVES

Labor potential as a factor of ensuring competitive advantages of business entities in Ukraine

Uliana Andrusiv[1]* (ID), Iryna Popadynets[2] (ID), Halyna Zelinska[1] (ID), Volodymyr Lagodiienko[3] (ID), Halyna Kupalova[4] (ID), Nataliia Goncharenko[4] (ID)

[1] Ivano-Frankivsk National Technical University oil and gas, Ivano-Frankivsk, Ivano-Frankivsk, 76000, Ukraine; andrusivu@ukr.net
[2] Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, 76000, Ukraine; irav.if@gmail.com
[3] Odessa National Academy of Food Technologies, Odesa, 65039, Ukraine; mega_iv12345@ukr.net
[4] Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; prof.galina@gmail.com (HK); nota7sha@ukr.net (NG)
*Correspondence: andrusivu@ukr.net, Tel.: + 38095 75 81 899

The purpose of the article is to justify the use of a matrix approach to the interpretation of the results of evaluating the effectiveness of the development of labor potential. As evaluation indicators, we propose the level of management of labor potential, which is determined using the grapho-analytical method "potential square" and the level of management of the competitiveness of the business entity, which is determined using the graphic method "polygon of competitiveness". To identify these indicators, we used a developed three-point aggregated scale, which made it possible to quantitatively divide the formed quadrants according to threshold values: the zone of high efficiency in the use of labor potential (quadrant 9($ML_{LP}{}^{QP}{}_{High}$; $ML_{CBE}{}^{CB}{}_{High}$)), average (quadrants 3 ($ML_{LP}{}^{QP}{}_{High}$; $ML_{CBE}{}^{CB}{}_{Low}$), 5 ($ML_{LP}{}^{QP}{}_{Average}$; $ML_{CBE}{}^{CB}{}_{Average}$), 6 ($ML_{LP}{}^{QP}{}_{High}$; $ML_{CBE}{}^{CB}{}_{Average}$), 7 ($ML_{LP}{}^{QP}{}_{Low}$; $ML_{CBE}{}^{CB}{}_{High}$), 8 ($ML_{LP}{}^{QP}{}_{Average}$; $ML_{CBE}{}^{CB}{}_{High}$)), and low (quadrants 1 ($ML_{LP}{}^{QP}{}_{Low}$; $ML_{CBE}{}^{CB}{}_{Low}$), 2 ($ML_{LP}{}^{QP}{}_{Average}$; $ML_{CBE}{}^{CB}{}_{Low}$), 4 ($ML_{LP}{}^{QP}{}_{Low}$; $ML_{CBE}{}^{CB}{}_{Average}$)). The value of the research lies in the fact that the proposed matrix approach to the results of evaluating the effectiveness of the development of labor potential makes it possible to take measures to improve its management. It is emphasized that in today's conditions and the limitation of financial resources, the vector of management should be aimed at preserving the labor potential, using its opportunities and experience.

1. Introduction

Changes in economic relations that occur on a market basis require the formation of a competitive environment in the state and require, accordingly, the achievement of a certain level of competitiveness of economic entities. There is no doubt that this is possible only with sufficient development of the labor resource. The human factor is defined as an important competitive reserve that needs to be improved along with other resources to increase the competitiveness of an enterprise as a system. However, in our country, the enterprise management mechanism actually rarely takes into account the competitive advantages of the professional and organizational qualities of employees compared to the personnel of competing business entities. This situation can be explained by the widespread traditional and habitual underestimation of the importance of the human factor in the development of the business environment of Ukrainian business entities. In the context of the global

pandemic, the spread of the corona virus disease, the practice of enterprise management requires new approaches to the organization of work, forms and methods of training, recruitment of applicants and vacancies, etc. World experience proves that only effective training of human resources capable of generating new ideas, creating and using advanced technologies will ensure the development of the state and ensure a stable position of competitive advantages of sustainable development in comparison with other countries. Therefore, in the current conditions, the main task for Ukrainian enterprises and organizations is the development of survival programs and the preservation of the most valuable human resource.

2. Literature review

Many well-known scientists have considered labor potential through various scientific prisms, in particular (Mazin et al., 2022; Popadynets et al., 2021) state that employee

competitiveness is characterized by their ability to outperform their competitors in competition for work, career growth, and hiring conditions. Among the factors that determine it, the potential for labor mobility of employees is particularly important. Bolshenko et al., (2021) proposed a matrix approach to choosing a strategy for forming the competitiveness of labor potential of consumer cooperation enterprises in the region. The calculations made it possible to determine the most attractive cities for the development of labor potential, as well as cities that need special state support to create the necessary conditions. Harmider et al., (2019) in their work, they proposed to use a methodological approach to assessing the use of the labor potential of business entities based on the fuzzy logic apparatus, which allows analyzing the labor potential as a multi-element object closely related to the structured functioning of business entities and its capabilities; provides a more accurate assessment of the labor potential and makes informed decisions to increase the level of its use. (Shelomentseva et al., 2017; Vovk et al., 2021; Pohrebniak et al., 2021; Tulchynska et al., 2021) argue that the modernization of the economy is impossible without the modernization of the labor market, and the current trends in the formation of the labor market are due to the need to switch to Industry 4.0. (Kenzhin et al., 2016; Lowitzsch et al., 2017; Cheremisina et al., 2022; Miethlich et al., 2020) prove that it is the labor potential that is the main one both for the development of the national economy as a whole and for business entities in particular. The competitiveness of the business environment of business entities will always depend on the quality of labor potential. Scientists, (Balouei Jamkhaneh et al., 2022) in their study identified 29 quality factors 4.0 that affect the readiness and ability of labor potential, based on multiple interaction of quality management at different stages of the production cycle of business entities. The results showed that they can improve the readiness and ability of human resources based on changes in quality management 4.0. Singh et al., (2022) in their work consider the forecast and directive policy of labor potential. Predictive people analytics helps predict the future for effective decision-making by business entities, while directive people analytics provides reasonable recommendations on the minimum next steps to achieve the desired results. (Bielova et al., 2022; Janshanlo et al., 2019; Hitka et al., 2019;, Petrova et al., 2020; Reissová et al., 2020) prove that a person should be guided by professions not only during his choice, but also throughout his working life. Scientists say that in a long run, social and labor relations can undergo drastic changes in three main directions. First, the boundaries of the traditional division of labor will change, the boundaries of professions will be erased, the rate of "extinction" of traditional professions will accelerate, and new, previously unpredictable ones will appear. Secondly, the forms of employment are changing. Along with traditional contractual forms of labor relations, employment in the form of freelancing, crowdsourcing, insourcing as well as flexible forms of involvement of specialists in labor activity, remote employment, project form of employment, etc. are actively developing. Third, people's mobility increases throughout the entire period of work. This is due to the activation of migration processes (more than 60%

of those who change their place of residence for work and employment reasons), as well as inter-professional, intersectoral, and intra-company mobility. Strelnikova, (2021) says that in the era of globalization processes, a person's knowledge and intellectual potential play a crucial role in shaping the competitive advantages of business entities. (Zelinska et al., 2021a; Zelinska et al., 2021b; Orlovska et al., 2021; Zelinska et al., 2021c) prove that the level of competitive advantages of the business environment of business entities directly depends on people and their human potential. Based on the above, the purpose of the article is to develop a matrix of interpretation of the results of evaluating the effectiveness of the use of labor potential as an indicator of ensuring the competitive advantages of the business environment of economic entities in Ukraine.

3. Research methods

The following research methods are used in the article: theoretical generalization is used for a more in-depth study of the essence of the labor potential concept and competitiveness of a business entity; graphical method is used to build a scheme for using labor potential as an indicator of the competitive advantages of the business environment of a business entity; systematic approach is used when building a target subsystem, providing subsystem and subsystem for managing the motivation of managers' work. The authors of the article also apply analysis and comparison for analytical procedures of assessing the labor potential and competitiveness of a business entity; economic and mathematical method (trend models of a second-order polynomial series) is used for constructing a system of equations for calculating forecast values of labor potential management levels and competitiveness of a business entity; classification is used when forming quadrants of the effectiveness of using labor potential as an indicator of competitive advantages; sociological (questionnaire) method is used when collecting and analyzing data on the levels of use of labor potential and competitiveness of business entities; methods of information technologies (expert systems) are used when conducting expert consultations on assessing the adequacy of the formed matrix of interpretation of results; expert method is used for conducting a three-stage research and experiment; step-by-step regression is used to establish the influence of factors on functionality.

4. Results and discussion

In a competitive environment, the labor potential of personnel arouses interest among the business entities management precisely for its significant advantages (professionalism, work experience, working capacity, etc.). Awareness of these factors in the scientific literature reflects a new approach to determining the role of an employee in the process of social production in a competitive environment.

In a general sense, competitiveness is interpreted as the presence of characteristics that form advantages for each subject of economic competition; as the ability to compete in certain markets of goods and services; as the ability to achieve

success in economic competition. An effective method for assessing competitiveness and determining its competitive positions is the polygon graphical method of competitiveness of a business entity.

In general, labor potential is the relationship between people regarding the accumulation and use of available opportunities and the effective implementation of labor activities. At the same time, most business entities use only the available capabilities of labor personnel, which allows them to maintain their sufficient level of competitiveness. If the business entity does not use the available personnel capabilities, then the level of competitiveness is low. Conversely, if it not only uses but also accumulates personnel opportunities, it can maintain a high level of its competitiveness (Simkiv et al., 2021; Govender et al., 2020; Djoemadi et al., 2019).

To distribute the assessment of the levels of labor potential management and competitiveness of a business entity, we used a three-point measurement scale (Table 1).

Table 1. The scale of qualitative assessment of the levels in Labor potential management and competitiveness of a business entity

Range of values	Three-point method	Quality characteristics
0-0.40	0-1.20	Low
0.41-0.8	1.21-2.4	Average
0.81-1.0	2.41-3	High

The level of competitiveness of a business entity has the ability to change quickly depending on changes in the positions of competitors. If the competitive position of a competitor increases, then the competitiveness of the analyzed business entity decreases and vice versa.

Based on the conducted research, it is proposed to establish the frequency of monitoring the level of competitiveness – 3 months (this period is empirically confirmed in practice to be optimal), if circumstances do not require it to be carried out earlier. Thus, the study of the influence of Labor potential as one of the factors that determine the competitiveness of a business entity will take place continuously and cyclically (Fig. 1).

For clear positioning of business entities in the quadrants of the matrix, the possible limits of variation of the values of the studied indicators are set as follows:

$$E_{LPBE} = \begin{cases} 0 \leq ML_{CBE}^{CB} \leq 3 \\ 0 \leq ML_{LP}^{QP} \leq 3 \end{cases} \quad (1)$$

Where:

E_{LPBE} – the state of use of labor potential of the business entity, in which these analytical indicators acquire certain values;

ML_{CBE}^{CB} – the level of management of the competitiveness of the business entity, in the form of a score (numerical score);

ML_{LP}^{QP} – the level of management of labor potential, in the form of a score (numerical score).

The central quadrant ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{Average}$) of the matrix is 5 (the 5th one), the positioning of which indicates the appropriate stable level of efficiency of the labor potential of the business entity as an indicator of its competitive advantages. This situation is typical when the dynamics, the level of management of labor potential and the level of management of the competitiveness of the business entity are equable. That is, the accumulated available opportunities for the effective implementation of labor activity are used at the average level, and such use of labor potential allows to maintain the competitiveness of the business entity, also at the average level. The efficiency of the use of labor potential is also at the average level, and further improvement requires additional costs.

Quadrant 1 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{Low}$). This one is the worst of all possible options. Finding the level of efficiency of labor potential in this quadrant indicates a decrease in the level of labor potential management and at the same time dropping of the level of competitiveness of the business entity.

The latter does not use the accumulated available opportunities for the effective implementation of labor activity, which in today's conditions of the fierce competition can lead to increased turnover of staff management and negative results for all activities.

Quadrant 2 ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{Low}$). The use of the accumulated available labor potential has a stable level of labor potential management ($1.2<ML_{LP}^{QP}\leq2$), but the level of management of the competitiveness of the business entity is reduced ($ML_{CBE}^{CB} \leq 1.2$), which is why the increasing the efficiency of labor potential as a competitive advantage is unlikely. That is, the effectiveness of the use of labor potential is low, because its target direction for the use does not meet the needs of the entity and the established objectives.

Quadrant 3 ($ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{Low}$). The use of the available opportunities for the labor activity of the enterprise in this zone has a low efficiency. Managerial personnel do not accumulate opportunities for the effective implementation of their labor activities, which reduces the level of competitiveness of a business entity. That is, the labor potential does not meet the requirements for the goals of the enterprise, so its further use requires a detailed assessment at the initial stage in order to obtain an adequate final result.

Quadrant 4 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{Average}$). The level of labor potential management is declining, which indicates a weakening of the use of existing opportunities for the implementation of labor activity, and the stable dynamics of the level of competitiveness of an enterprise indicates a consolidation of market positions. The effectiveness of the use of labor potential has an average level. In such a situation, attention should be focused on the accumulation of existing opportunities and further development for the effective implementation of the labor activity of the staff.

Quadrant 6 ($ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{Average}$). The effectiveness of the use of labor potential as an indicator of the enterprise's competitive advantages is at an average level. The accumulation and use of available opportunities for labor activity has achieved its goals. This state satisfies the needs of both the management corps and the personnel of the enterprise. An increase in the level of labor potential management provides a business entity with an increase in labor productivity, a decrease in staff turnover, etc. Further growth is possible through investment in human development.
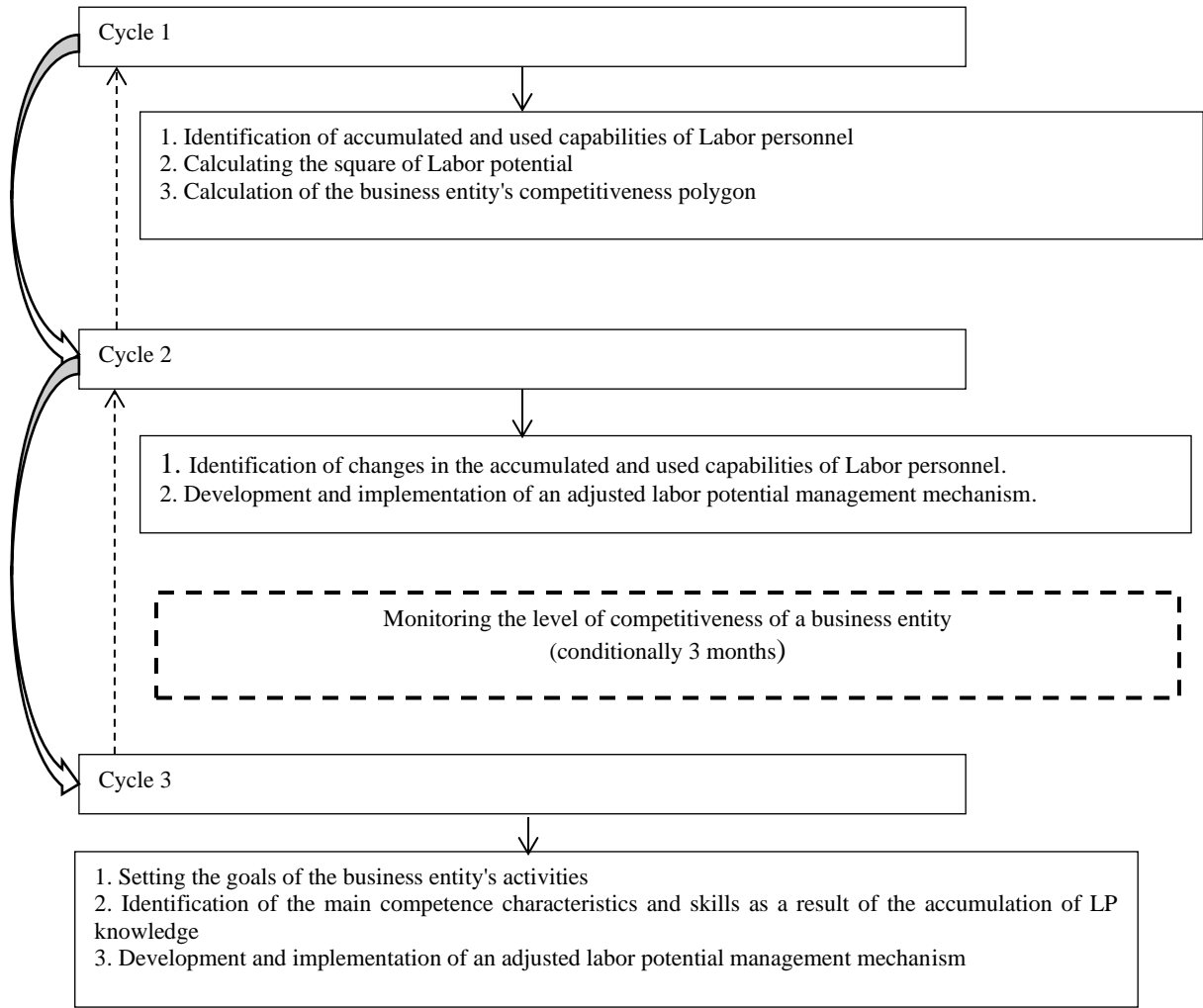
Fig. 1. Scheme of using LP as an indicator of competitive advantages of the business environment for a business entity

The level of management of the competitiveness of the business entity			
High	**7** $\begin{cases} ML_{LP}^{QP} \leq 1.2, \\ 2.4 < ML_{CBE}^{CB} \leq 3 \end{cases}$	**8** $\begin{cases} 1.2 < ML_{LP}^{QP} \leq 2.4, \\ 2.4 < ML_{CBE}^{CB} \leq 3 \end{cases}$	**9** $\begin{cases} 2.4 < ML_{LP}^{QP} \leq 3, \\ 2.4 < ML_{CBE}^{CB} \leq 3 \end{cases}$
Aver-age	**4** $\begin{cases} ML_{LP}^{QP} \leq 1.2, \\ 1.2 < ML_{CBE}^{CB} \leq 2.4 \end{cases}$	**5** $\begin{cases} 1.2 < ML_{LP}^{QP} \leq 2.4, \\ 1.2 < ML_{CBE}^{CB} \leq 2.4 \end{cases}$	**6** $\begin{cases} 2.4 < ML_{LP}^{QP} \leq 3, \\ 1.2 < ML_{CBE}^{CB} \leq 2.4 \end{cases}$
Low	**1** $\begin{cases} ML_{LP}^{QP} \leq 1.2, \\ ML_{CBE}^{CB} \leq 1.2 \end{cases}$	**2** $\begin{cases} 1.2 < ML_{LP}^{QP} \leq 2.4, \\ ML_{CBE}^{CB} \leq 1.2 \end{cases}$	**3** $\begin{cases} 2.4 < ML_{LP}^{QP} \leq 3, \\ ML_{CBE}^{CB} \leq 1.2 \end{cases}$
	Low	Average	High

Level of labor potential

Fig. 2. Matrix of interpretation of the results of assessing the effectiveness of labor potential as an indicator of advantages of the business entity

Quadrant 7 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{High}$). Efficiency in the use of labor potential is at a high level. However, the level of labor potential management is very low, which requires the introduction of a new or improvement of the existing system for accumulating the available personnel capabilities, which will improve their use in the implementation of labor activities and increase the level of competitiveness of the enterprise.

Quadrant 8 ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{High}$). The efficiency of using the labor potential of the enterprise in this quadrant is stable, however, there are reserves for its improvement through the transformation and adjustment of the elemental or functional system for accumulating the available personnel capabilities.

Quadrant 9 ($ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{High}$). The best possible option. The levels of efficiency and management of the labor potential of a business entity are simultaneously growing ($2<ML_{CBE}^{CB}<3$, $2<ML_{LP}^{QP}<3$), which increases its level of competitiveness. This situation is an indicator of the high effectiveness of the use of labor potential as a competitive advantage of the entity. According to the study (Table 2), we will analyze the results of assessing the effectiveness of the use of labor potential as the main factor in the competitive advantage of an enterprise in Table 3.

According to the positioning results, all enterprises are in the zone with average efficiency (quadrant 8-9) in terms of the use of labor potential. It is characterized by stability, that is, an average level of enterprise competitiveness and an average and high level of labor potential management. The analysis testifies to the stability of the level of labor potential (quadrant 8.9), since the dynamics of management levels and the effectiveness of its use to increase the competitiveness of the enterprise is uniform.

Thus, in all four business entities, there is a tendency to improve the state of use of labor potential and increase the levels of management (Table 3). Using trend models of a second-order polynomial series (Table 4) the forecast values are calculated (Table 5) taking into account the impact of the proposed measures on the efficiency of using the labor potential of the enterprise. The predicted values of the levels of labor potential management and the competitiveness of the enterprise made it possible to build a predictive matrix of the effectiveness of the use of labor potential as an indicator of the competitive advantages of the enterprise (Table 6).

Table 2. Initial data for constructing a performance matrix for the use of labor potential as an indicator of the competitive advantage of an enterprise

Business entity	Level of labor potential management (ML_{LP}^{QP})			Level of management of the competitiveness of a business entity (ML_{CBE}^{CB})		
	ML_{LP}^{QP}	$ML_{LP}^{QP}{}'$	$ML_{LP}^{QP}{}''$	ML_C^{CP}	$ML_C^{CP}{}'$	$ML_C^{CP}{}''$
Business entity 1	1.45	1.30	2.00	2.04	2.04	2.29
Business entity 2	1.45	1.30	1.45	1.88	1.88	1.99
Business entity 3	1.80	1.45	2.75	1.97	2.03	2.20
Business entity 4	1.80	1.65	2.65	2.15	2.15	2.37

Table 3. Interpretation of the efficiency of using the labor potential of an enterprise

Business entity	experiment	Efficiency of using the labor potential	Quadrant of the matrix of the effectiveness of using the labor potential	Zone of efficiency of using the labor potential
Business entity 1	ML_{LP}^{QP}	$\begin{cases} 1.2 < 1.45 \le 2.4 \\ 1.2 < 2.04 \le 2.4 \end{cases}$	5	average
	$ML_{LP}^{QP}{}'$	$\begin{cases} 1.2 < 1.30 \le 2.4 \\ 1.2 < 2.04 \le 2.4 \end{cases}$	5	average
	$ML_{LP}^{QP}{}''$	$\begin{cases} 1.2 < 2 \le 2.4 \\ 1.2 < 2.29 \le 2.4 \end{cases}$	5	average
Business entity 2	ML_{LP}^{QP}	$\begin{cases} 1.2 < 1.45 \le 2.4 \\ 1.2 < 1.80 \le 2.4 \end{cases}$	5	average
	$ML_{LP}^{QP}{}'$	$\begin{cases} 1.2 < 1.30 \le 2.4 \\ 1.2 < 1.88 \le 2.4 \end{cases}$	5	average
	$ML_{LP}^{QP}{}''$	$\begin{cases} 1.2 < 1.45 \le 2.4 \\ 1.2 < 1.99 \le 2.4 \end{cases}$	5	average
Business entity 3	ML_{LP}^{QP}	$\begin{cases} 1.2 < 1.80 \le 2.4 \\ 1.2 < 1.97 \le 2.4 \end{cases}$	5	average
	$ML_{LP}^{QP}{}'$	$\begin{cases} 1.2 < 1.45 \le 2.4 \\ 1.2 < 2.03 \le 2.4 \end{cases}$	5	average
	$ML_{LP}^{QP}{}''$	$\begin{cases} 2.4 < 2.75 \le 3 \\ 1.22 < 2.20 \le 3 \end{cases}$	6	high
Business entity 4	ML_{LP}^{QP}	$\begin{cases} 1.2 < 1.80 \le 2.4 \\ 1.2 < 2.11 \le 2.4 \end{cases}$	5	average
	$ML_{LP}^{QP}{}'$	$\begin{cases} 1.2 < 1.65 \le 2.4 \\ 1.2 < 2.15 \le 2.4 \end{cases}$	5	average

$ML_{LP}^{QP\prime\prime}$	$\begin{Bmatrix} 2.4 < 2.65 \le 3 \\ 1.2 \le 2.37 \le 2.4 \end{Bmatrix}$	6	high

Table 4. Trend models of second-order polynomial series

Business entity	Level of labor potential management (ML_{LP}^{QP})	Level of management of the competitiveness of a business entity (ML_{CBE}^{CB})
Business entity 1	$y = 0.425x^2 - 2.275x + 4.3$	$y = 0.125x^2 - 0.625x + 2.79$
Business entity 2	$y = 0.1x^2 - 0.6x + 2.25$	$y = 0.015x^2 + 0.005x + 1.73$
Business entity 3	$y = 0.825x^2 - 4.475x + 7.45$	$y = 0.055x^2 - 0.215x + 2.18$
Business entity 4	$y = 0.575x^2 - 3.025x + 5.55$	$y = 0.09x^2 - 0.41x + 2.57$

Table 5. Predicted values of the levels of management of the labor potential and competitiveness of the enterprise

Business entity	Level of labor potential management (ML_{LP}^{QP})		Level of management of the competitiveness of a business entity (ML_{CBE}^{CB})	
	2022	2023	2022	2023
Business entity 1	2	2.55	2.29	2.79
Business entity 2	1.45	2.7	1.99	2.13
Business entity 3	2.75	2.99	2.22	2.48
Business entity 4	2.65	2.8	2.37	2.77

Table 6. Analysis of predicted values of efficiency levels and management of labor motivation of managers of business entities

Business entity	years	Efficiency of using labor potential as an indicator of competitive advantages of an enterprise	Quadrant of the performance matrix of the use of labor potential as an indicator of the competitive advantages of an enterprise	Zone of efficiency in the use of labor potential as an indicator of the competitive advantages of an enterprise
Business entity 1	2022	$\begin{Bmatrix} 2.4 < 2.55 \le 3 \\ 2.4 < 2.79 \le 3 \end{Bmatrix}$	9	high
	2023	$\begin{Bmatrix} 1.2 < 1.30 \le 2.4 \\ 1.2 < 2.04 \le 2.4 \end{Bmatrix}$	5	average
Business entity 2	2022	$\begin{Bmatrix} 1.2 < 1.45 \le 2.4 \\ 1.2 < 1.99 \le 2.4 \end{Bmatrix}$	5	average
	2023	$\begin{Bmatrix} 1.2 < 1.79 \le 2.4 \\ 1.2 < 2.13 \le 2.4 \end{Bmatrix}$	5	average
Business entity 3	2022	$\begin{Bmatrix} 2.4 < 2.75 \le 3 \\ 1.2 < 2.20 \le 2.4 \end{Bmatrix}$	6	average
	2023	$\begin{Bmatrix} 2.4 < 2.7 \le 3 \\ 2.4 < 2.48 \le 3 \end{Bmatrix}$	9	high

Therefore, the prediction for 2022-2023 shows a positive trend, as the analyzed business entities are located in a high zone of efficiency of labor potential (quadrant 9) and confirms the expedience of diagnosing the accumulated and used opportunities for effective implementation of its work in terms of competitiveness of business entities.

Thus, to achieve high performance, the enterprise needs to have perfect systems of motivation and stimulation of staff based on innovative methods of its development, monitoring motivation as a tool for teamwork, which will be the basis for management decisions to improve personnel policy and effective implementation of labor activity (Lagodiienko et al., 2022; Cherchata et al., 2022).

5. Conclusions

A matrix approach was used to assess the effectiveness of labor potential as an indicator of competitive advantage. Management of labor potential was determined using the graphoanalytical method of "potential square". The level of competitiveness management related to the business sector was determined using the competitive polygon graphical method. Also, emphasis is held on the use of a three-point enlarged scale. With its help, the threshold values of the efficiency of labor potential were determined, which, in our opinion, is particularly relevant in the current crisis conditions of the Ukrainian economy. The division of business entities by quadrants was carried out and substantiated: 9 ($ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{High}$) –

high efficiency zone, 1 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{Low}$), 2 ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{Low}$), 4 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{Average}$) – low efficiency zone i 3 ($ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{Low}$), 5 ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{Average}$), 6 ($ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{Average}$), 7 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{High}$), 8 ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{High}$) – average efficiency zone. The results of the calculations prove that such a division enables high-quality management of human resources in the conditions of a new work organization associated with the corona virus situation in the world. Using of the matrix method made it possible to prove the effectiveness of labor potential as an indicator of the competitive advantages of an economic entity. Its main criteria were the increase in the educational and professional levels of labor potential. Based on the accumulation of its opportunities for further development in 2022-2023, the positioning of business entities in the visualized quadrants is determined: zone of high efficiency of human resource management - business entities 3 and 4 and close to it - business entity 2. The proposed matrix and graphic approaches to evaluating the effectiveness of the use of labor potential enable its application and adaptation in the conditions of the functioning of other economic entities in Ukraine. The advantage of the proposed matrix approach compared to the approaches existing today regarding the results of evaluating the effectiveness of the development of labor potential is the possibility of making timely management decisions regarding measures for its preservation and use at a specific moment in time. By investing in personnel development, the business entity will be competitive in the market even during the difficult times of the country's reconstruction after the war, will allow it to take a stable position among competitors, because it will have the main advantage - highly educated and professional employees. Development for the world's highest value – a human being, his abilities and talents, should become a long-term strategic goal of any socially responsible business entity.

Reference

Balouei Jamkhaneh, H., Shahin, A., Parkouhi, S. V., Shahin, R., 2022. The new concept of quality in the digital era: A human resource empowerment perspective. TQM Journal, 34(1), 125-144. DOI: 10.1108/TQM-01-2021-0030

Bielova, A., Koval, S., Zhuravska, N., Agayev, A., 2022. The main vectors of labor and education transformation of modern workforce. DOI: 10.1007/978-3-030-85043-2_55

Bolshenko, S. F., Gorbunova, V. B., Martynenko, O. V., 2021. A methodological approach to determining the competitive positions of the labor potential in regional consumer cooperation. DOI: 10.1007/978-3-030-57831-2_71

Cherchata, A., Popovychenko, I., Andrusiv, U., Gryn, V., Shevchenko, N., Shkuropatskyi, O., 2022. Innovations in logistics management as a direction for improving the logistics activities of enterprises. Management Systems in Production Engineering, 30(1), 9-17. DOI: 10.2478/mspe-2022-0002

Cheremisina, S., Rossokha, V., Petrychenko, O., Fedoryshyna, L., Dobrianska, N., 2022. The cost of formation and problems of effective realization of labor potential in Ukraine. [Вартість формування та проблеми ефективної реалізації трудового потенціалу в Україні] Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu, (2), 159-165. DOI: 10.33271/nvngu/2022-2/159

Djoemadi, F. R., Setiawan, M., Noermijati, N., Irawanto, D. W., 2019. The effect of work satisfaction on employee engagement. [Wpływ satysfakcji z pracy na zaangażowanie pracowników] Polish Journal of Management

Studies, 19(2), 101-111. DOI: 10.17512/pjms.2019.19.2.08

Govender, M., Bussin, M. H. R., 2020. Performance management and employee engagement: A south african perspective. SA Journal of Human Resource Management, 18, 1-9. DOI: 10.4102/sajhrm.v18i0.1215

Harmider, L. D., Taranenko, I. V., Korotka, L. I., Begma, P. O., 2019. Methodological approach to labor potential assessment based on the use of fuzzy sets theory. [Методологический подход к оцениванию трудового потенциала на основе использования теории нечетких множеств; Методологічний підхід до оцінювання трудового потенціалу на основі використання теорії нечітких множин] Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu, 2019(6), 144-149. DOI: 10.29202/nvngu/2019-6/21

Hitka, M., Kucharčíková, A., Štarchoň, P., Balážová, Z., Lukáč, M., Stacho, Z., 2019. Knowledge and human capital as sustainable competitive advantage in human resource management. Sustainability (Switzerland), 11(18). DOI: 10.3390/su11184985

Ivashkiv, I., Kupalova, H., Goncharenko, N., Andrusiv, U., Streimikis, J., Lyashenko, O., Yakubiv, V., Lyzun, M., Lishchynskyi, I Saukh,I. (2020). Environmental responsibility as a prerequisite for sustainable development of agricultural enterprises. *Management Science Letters*, 10(13), 2973-2984. DOI: 10.5267/j.msl.2020.5.028

Janshanlo, R. E., Kogut, O. Y., Czerewacz-Filipowicz, K., 2019. Human capital management trends in the innovative economy of Kazakhstan. [Tendencje zarządzania kapitałem ludzkim w innowacyjnej gospodarce Kazachstanu] Polish Journal of Management Studies, 20(2), 267-278. DOI: 10.17512/pjms.2019.20.2.22

Kenzhin, Z., Bayandin, M., Primbetova, S., Tlesova, A., Bogdashkina, I., 2016. Streamlining human resource management at enterprises operating within Kazakhstan's present-day agro-industrial complex. Journal of Internet Banking and Commerce, 21(Special Issue 6)

Lagodiienko, V., Samoilenko, V., Pasko, M., Ovod, L., Matsulevych, Y., 2022. The Mechanism of Labor Motivation as a Determinant of Economic Security of Enterprises in Competitive Conditions. International Journal of Computer Science and Network Security, VOL.22, No.2, 385-393.

Lowitzsch, J., Dunsch, S., Hashi, I., 2017. Spanish sociedades laborales—activating the unemployed: A potential new EU active labour market policy instrument. Spanish sociedades laborales-activating the unemployed: A potential new EU active labour market policy instrument (pp. 1-129) DOI: 10.1007/978-3-319-54870-8

Mazin, A. L., Troitskaya, A. A., Kuznetsov, V. P., Shmeleva, N. V., Frantseva-Kostenko, E. E., 2022. The relationship between the workers competitiveness and their labor mobility in a digital economy. DOI: 10.1007/978-3-030-77000-6_15

Miethlich, B., Kvitka, S., Ermakova, M., Bozhko, L., Dvoryankin, O., Shemshurina, S., Kalyakina, I., 2020. Correlation of educational level, labor potential and digital economy development in slovakian, Гkrainian and russian experience. TEM Journal, 9(4), 1597-1605Orlovska, Y., Cherchata, A., Kovalenko, O., 2021. Development of intellectual economy: some approaches for policy elaborating. Baltic Journal of Economic Studies, 6(2), 116-124.

Petrova, K., Koval, V., Tepavicharova, M., Zerkal, A., Radchenko, A., Bondarchuk, N., 2020. The interaction between the human resources motivation and the commitment to the organization. Journal of Security and Sustainability Issues, 9(3), 897-907. DOI: 10.9770/jssi.2020.9.3(15)

Pohrebniak, A., Tkachenko, T., Arefieva, O., Karpenko, O., Chub, A., 2021. Formation of a Competitive Paradigm of Ensuring Economic Security of Industrial Enterprises in the Conditions of Formation of Circular Economy. IJCSNS International Journal of Computer Science and Network Security, 21(9), 118-124. DOI: 10.22937/IJCSNS.2021.21.9.16

Popadinets, I., Andrusiv, U., Galtsova, O., Bahorka, M., Yurchenko N., 2021. Management of motivation of managers' work at the enterprises of Ukraine: innovative aspects. Management Systems in Production Engineering, Volume 29, Issue 2, pp. 120-131. DOI 10.2478/mspe-2021-0016

Popadynets, N., Yakymchuk, O., Yakymchuk, A., Bilyk, R., Irtyshcheva, I., Hryhoruk, I., . . . Serhiychuk, S., 2021. Increasing competitiveness of economic regions: Prospects for innovative development. DOI: 10.1007/978-3-030-68017-6_74

Reissová, A., Papay, M., 2021. Relationship between employee engagement, job satisfaction and potential turnover. TEM Journal, 10(2), 847-852. DOI: 10.18421/TEM102-44

Shelomentseva, V. P., Ifutina, Y. A., Frezorger, L. A., 2017. Structural changes in economics and their impact on the labor market. Journal of

Advanced Research in Law and Economics, 8(4), 1315-1321. DOI: 10.14505/jarle.v8.4(26).30

Simkiv, L., Shults, S., Lutskiv, O., Andrusiv, U., 2021. Analysis of the Dynamics of Structural Processes in the Context of Ensuring Sustainable Development. European Journal of Sustainable Development, 10(1), 153-167. DOI: 10.14207/ejsd.2021.v10n1p153

Singh, A., Singh, H., Singh, A., 2022. People analytics: Augmenting horizon from predictive analytics to prescriptive analytics. DOI: 10.1007/978-3-030-82763-2_13

Strelnikova, L., 2021. Prospects of digital technologies implementation in the system of human resources management of russian agricultural companies. Paper presented at the E3S Web of Conferences, , 258. DOI: 10.1051/e3sconf/202125801002

Truss, C., Shantz, A., Soane, E., Alfes, K., Delbridge, R., 2013. Employee engagement, organisational performance and individual well-being: Exploring the evidence, developing the theory. International Journal of Human Resource Management, 24(14), 2657-2669. DOI: 10.1080/09585192.2013.798921

Tulchynska, S., Vovk, O., Popelo, O., Saloid, S., Kostiunik, O., 2021. Innovation and investment strategies to intensify the potential modernization and to increase the competitiveness of microeconomic systems. IJCSNS International Journal of Computer Science and Network Security, 21(6), 161-168.

Vovk, O., Tulchynska, S., Popelo, O., Tulchinskiy, R., Tkachenko, T., 2021. Economic and Mathematical Modeling of the Integration Impact of Modernization on Increasing the Enterprise Competitiveness. Management Theory and Studies for Rural Business and Infrastructure Development, 43(3), 383-389. DOI: 10.15544/mts.2021.35.

Zelinska, H., Andrusiv, U., Daliak, N., Dovgal, O., Lagodiienko, V., 2021. Sustainable Development: Trends in Ukraine and the World. Journal Of Environmental Management And Tourism, 12(5), 1179-1187. DOI: 10.14505//jemt.v12.5(53).03

Zelinska, H., Andrusiv, U., Galtsova, O., Dmytrechenko, M., 2021. Management of Social Risks and their Impact on the Spheres of Human Life in the Conditions of Sustainable Development of Ukraine. Problemy ekorozwoju, 16(2), 116-124. DOI: 10.35784/pe.2021.2.12

Zelinska, H., Andrusiv, U., Simkiv, L., 2020. Knowledge economy: trends in the world and analysis of Ukraine. Journal of Eastern European and Central Asian Research, 7(1), 104-113.

劳动力潜力作为保障乌克兰企业竞争优势的因素

關鍵詞
劳动潜力
竞争力
商业实体
商业环境
战争

摘要
本文的目的是为了证明使用矩阵方法来解释评估劳动力潜力发展成效的结果是合理的。作为评估指标，我们提出了劳动力潜力管理水平，该水平是使用"潜力平方"图解分析方法和企业竞争力管理水平的图形方法"竞争力多边形"确定的。为了确定这些指标，我们使用了一个开发的三点聚合量表，这使得根据阈值将形成的象限进行定量划分成为高效利用劳动力潜力的区域（象限 9（$ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{High}$），平均（象限 3 ($ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{Low}$), 5 ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{Average}$), 6 ($ML_{LP}^{QP}{}_{High}$; $ML_{CBE}^{CB}{}_{Average}$), 7 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{High}$), 8 ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{High}$))和低效利用劳动力潜力的区域（象限 1 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{Low}$), 2 ($ML_{LP}^{QP}{}_{Average}$; $ML_{CBE}^{CB}{}_{Low}$), 4 ($ML_{LP}^{QP}{}_{Low}$; $ML_{CBE}^{CB}{}_{Average}$)). 研究价值在于，提出的矩阵方法可以对劳动力潜力发展的效果进行评估，并采取措施来改进其管理。强调在今天的情况下和财政资源的限制下，管理的向量应该旨在保护劳动力潜力，利用其机会和经验。