Tec Empresarial
P-ISSN: 1659-2395; E-ISSN: 1659-3359

EFFICIENCY OF USING HUMAN RESOURCES IN THE AGRICULTURAL FIELD: MAIN CRITERIAS AND PRIORITIES

Vahid Amrahov Tofig[*], Sabina Hajiyeva Ismail[2], Narmin Mirzazadeh Gabil[3], Narmina Taghiyeva Ismail[4], Minura Karimova Haji[5], Fazil Karimov Jamil[6]

[1*2] Agribusiness and Management Department, Agribusiness and Administration Faculty, Azerbaijan State Agrarian University, Ganja, Azerbaijan

[3]Agribusiness and Management Department, Agribusiness and Administration Faculty, Azerbaijan State Agrarian University, Ganja, Azerbaijan

[4]Agribusiness and Management Department, Agribusiness and Administration Faculty, Azerbaijan State Agrarian University, Ganja, Azerbaijan

[5]Department of Economics, Faculty of Economics and Management, Azerbaijan Technology University, Ganja, Azerbaijan

[6]Department of Economics, Faculty of Economics and Management, Azerbaijan Technology University, Ganja, Azerbaijan

***Corresponding Author:** Vahid Amrahov Tofig,

*Agribusiness and Management Department, Agribusiness and Administration Faculty, Azerbaijan State Agrarian University, Ganja, Azerbaijan, E-Mail:

Abstract

Although the development of the agricultural sector is one of the priorities of the state's economic policy, its economic growth is directly related to the availability of production resources and the level of their use. In this context, increasing the efficiency of the formation and using of human capital is considered one of the main tasks of agricultural producers. Naturally, the using level of human resources based on the criteria of their effectiveness. The increasing demand for human resources in agricultural production leads to an assessment of the determinants that determine its efficiency. Therefore, it is important to determine the relationship between performance criteria and determinants, taking into account the factors influencing the use of human resources.

Key words: production, efficiency, human resource, demographic, personnel policy

INTRODUCTION

The economic security of the state and the level of society's well-being depend on the level of development of agriculture. Taking a strategic position in the economy, this field acts as a productive system aimed at continuously providing the country with food and other necessary products. "In this regard, the need to identify ways and opportunities to ensure the modernization, sustainability, and resilience of the agricultural economy in modern conditions is significant" (Amrakhov V.T., 2014).

That is why the development of the agricultural field can be considered one of the priorities of the state's economic policy. Indicators of the role of the agricultural field include the active population

engaged in this field and the special weight it holds in the structure of the gross domestic product. These parameters reflect the state of agricultural production and vary depending on a number of factors, including global economic policy as well as the level of state support directed to this sector (Smirnova E.A., 2019).

It is important to take into account the direction of production, soil characteristics, climate, and other parameters in agriculture. Depending on these parameters, producers decide what crop to grow, at what time of the year, and where. Moreover, choosing the right soil, climate, and time is not enough to get a high-quality product. So, there are a number of procedures and factors that should be considered in this process (Stijns J.P.C. , 2005).

The development of agricultural production, despite the serious influence of natural conditions on it, depends to a decisive extent on the human factor, its ability to manage financial resources, equipment and other material resources, its focus on the organization and use of labor, the development of progressive public policy to create an effective management system.

The idea of human capital is of particular importance as one of the main factors in the economic growth of a country, especially in the agricultural sector. The ways of ensuring the increase of the efficiency indicator of the formation and use of human capital are the reasoned and proposed thinking in the agricultural sector by increasing the employment of the rural population and strengthening investment support for the development of human capital. In this regard, the demand for human resources is increasing day by day, and efforts are being made to determine the possibilities of increasing efficiency indicators in their use.

The main purpose of agriculture is not only to produce products but also to provide employment to a large part of the population, and thus it forms the basis of the economic system. An increasingly important task for subjects operating in modern conditions is the creation of new and more effective management systems, the basis of which is human resource management, as part of the management of international quality standards. In this regard, the improvement of personnel potential occupies one of the leading positions in state policy (Upreti P. , 2015). The implementation of these processes in the agricultural field, which differs in its specificity, has a greater impact on the quality of life and health of people. Therefore, the strategy of efficient management of human resources in agriculture is an objective necessity, and its solution depends on a number of problems arising under the influence of internal and external environmental factors in the enterprise.

In modern conditions, not only equipment and inventory, but first of all, human resources act as a factor of increasing competitiveness, economic growth, and the efficiency of all production and economic activities. The human resource is an integral part of any field of economic activity. In

addition to its self-financing feature, it is also able to act as the main factor that ensures the protection, efficient use, and increase of all capital (Bryson J. M. 2018).

Forming human resources in the agricultural sector by increasing the employment of the rural population and strengthening investment support for the development of human capital is one of the most important issues at present (Gusev A.Y., Koshkina I.G. 2021).
Growth and development in the new economic conditions, opportunities for effective use of human resources, the urgency of solving the problems of human capital formation, and insufficient research in some theoretical and practical aspects determine the relevance and importance of the research topic.

LITERATURE REVIEW

In order to gain and maintain competitive positions, promote products in markets, and attract buyers to products, increased efforts are required in the field of effective use of human resources. Taking into account that human resources are the most important and specific resource, their effective use is the basis of their ability to achieve the strategic goals set before the agrarian sector.

The problems of employment in the agricultural field, the formation of human capital, and the processes of their effective use have been discussed for a long time. Meanwhile, efforts are being made to stimulate the state food supply and to direct personnel in this field. Theoretical studies and practical works in the field of effective management of human capital and personnel, as well as in the agricultural field of the economy, can be found in the works of local and foreign authors.

The solution to the problem of increasing the efficiency of the use of human resources in the agricultural field has been widely researched by many economists. Thus, the main factor of production growth is the increase of labor efficiency (Zharkeshova, A. S., Kirdasinova, K. A., Amalbekova, G. Y., Bekmukhametova, A. B., Dabyltayeva, N. E., & Tauassarova, A. K. 2017). In recent years, a number of studies have been conducted in the direction of increasing labor productivity in agriculture and their effective use. At the same time, the problem of increasing the effective use of human resources in agricultural regions, which has significant potential for solving import substitution issues remains relevant (Hajiveya S.İ., 2022).

The formation and management of human capital in agriculture, which is one of the traditional areas of the economy, is a complex economic problem, and its solution requires the development of a number of theoretical, methodological, and practical issues aimed at ensuring the country's food independence and increasing its competitiveness. The natural processes of urbanization and the increasing complexity of agricultural labor determine high requirements for the quality criterion of human capital. The concept of human capital allows us to comprehensively study the role of labor resources in the agricultural field, to implement a dialectical approach when modeling the reproduction of labor, to connect the economic and social aspects of agrarian development,

and to determine the initial conditions of development. The aggravation of demographic and economic problems leads to the quantitative and qualitative deterioration of the labor potential of the rural population. The decrease in the number of labor resources in the agricultural field, the imbalance in their structure, and the unfavorable socio-economic conditions manifest in the decrease in production and in meeting the population's demand for food products. Improvement of the current situation is possible by improving the mechanisms of reproduction of labor resources in agriculture. The reproduction of labor resources ensures the formation, distribution, exchange, and use of their quantitative and qualitative characteristics. (Agustí Jausas. 2011). A similar opinion was expressed by T.I. Zaslavskaya. She evaluated labor resources only quantitatively and considered them as a part of productive forces (Zaslavskaya T.I. 1974). The concept of labor resources can be considered as having the necessary skills, abilities, and physical components of the population to participate in production activities (Olga Kudryavtseva, 2011). In addition to these ideas, Yu.M. Ostapenko believes that in addition to the physical development necessary to perform useful work in agriculture, workers must have mental abilities and knowledge (Babenko A., Vasilyeva O. 2017). The fact that workers have intellectual abilities and knowledge makes the issues of accelerating the integration of science and production urgent. The lack of a coherent innovation structure between production, science, education, and financial organizations slows down the intensive development of the agricultural field (Kokin Yu.P. 2010).

The personnel policy of enterprises plays an important role in the process of increasing the possibilities of efficient use of human resources in the agricultural field. Here, the result of personnel policy is understood as the selection of personnel who will ensure the stable and efficient operation of the enterprise, the determination of their correct rotation depending on the increase in the level of their education and professional qualifications, also a set of theoretical views, principles and requirements (Makarova V., 1998). In this context, improving the educational level of producers has a decisive role in overall economic development (Gylfason T. , 2001).

The main factors influencing the increase in the efficiency of use of human resources include:
- formation of conceptual unity among the activities of the manager and divisions of the enterprise;
- availability of reliable information on the direction of labor results and income distribution;
- improving the culture of the management system;
- compliance with psychophysical and ergonomic standards of working conditions;
- stimulation of creative initiative and innovative activity of employees;
- an integrated approach to the formation of human resources, maintenance and development of main personnel;
- provision of legal guarantees and protection of workers;
- organizing a system for using the tactics of continuous training and retraining of employees
- differentiated approach to inclusion in enterprises
- formation of a favorable socio-psychological climate in teams (Amrahov V.T. 2015).

MATERIAL AND METHODOLOGY

The purpose of the research is to determine the main factors affecting the efficiency of the use of human resources in the agricultural field and to formulate a successful development model in this direction. In the scientific literature, there are quite a lot of opinions about the essence of the concept of human resources. Summarizing them, we can say that human resources are the source of the formation of competitive advantages in subjects. That is, human resources represent both the real and potential capabilities of the personnel of the enterprise in terms of physical and mental abilities, their use has a mutually beneficial effect for both employees and subjects. In other words, it is a combination of the personal and professional skills of the employee. A number of indicators are used to evaluate human resources and their potential. These indicators are the number and composition of personnel, age, education level, salary, health, scientific and technical progress, working conditions, shortage of personnel, personnel turnover, etc.

The economic efficiency of the use of labor resources in agriculture is determined using various indicators. In this regard, one of the most important indicators is the value of the gross product per average annual labor productivity indicator. The article deals with the determination of correlation and regression dependence of factors affecting labor productivity and the prediction of labor productivity based on the data of the State Statistics Committee of the Republic of Azerbaijan using the capabilities of Microsoft Excel software.

Correlation analysis is understood as a method to determine the existence of a relationship and to calculate the proximity between indicators. The essence of this method consists in the construction and analysis of an economic and mathematical model drawn up in the form of a regression equation characterizing the dependence of the characteristic on the factors that determine it.

The labor supply of agriculture is a broad category: sufficient quantity and quality of workers, availability of features that ensure efficient operation, indicators characterizing the volume and structure of labor, etc. It was also considered appropriate to use sociological research and questionnaires to carry out the research.

RESULTS AND DISCUSSIONS

The significant influence of the number of employed people on the production of agricultural products dictates the need for a special approach to this factor. Most production and technical-technological processes cannot be carried out without the human factor. Taking into account the noted factors, let's determine the impact of each mentioned factor on production (Amrahov V.T., Mirzazadeh N.G., Taghiyev M.Z., Muradov R.J., Hamidov A.V., Karimova M. H., 2023).

The volume of investments in the agrarian sector plays an exceptional role in the implementation of extensive reproduction as well as in the application of new techniques and technologies. This also plays an exceptional role in modern personnel policies and their efficient usage (Amrahov V., Mahmudov E., Aliyev S., Hajiyeva S., 2022).

The working of production funds in agriculture in unfavorable conditions causes them to wear out faster. From this point of view, the issue of the involvement of the main production funds with high technical and economic parameters in production is always relevant. Effective use of the main production funds saves its importance in the organization of efficient work activities of employees in the production and subsequent stages.

The results of the efficient use of labor resources, including the improvement of labor productivity, are manifested in the increase in the volume of the product produced in a certain time or in the saving of working time per product unit. Let's use correlation and regression analysis to justify increasing the efficiency of the use of human resources in agriculture.

The main stages of correlation and regression analysis are as follows:

1. Finding the cause-and-effect relationship between features and determining the predominant factors.
2. Preparation of primary data that determines the adequacy of observation units, the homogeneity of the considered set of signs and the closeness of their distribution to the norm.
3. Selection of the relationship model between the characteristics and factors arising on the basis of the enumeration of several analytical functions.
4. Building a matrix of multifunctional linear correlation coefficients and studying the closeness of the relationship between the characteristics and factors, as well as between factors, based on the elimination of multicollinear factors.
5. Selection of primary factors included in the multifactorial model - multiple regression equation based on appropriate statistical methods.
6. Calculation of the parameters of the multiple regression equation and assessment of the significance of the selected factors, correlation, and regression coefficients using the t-Student and F-Fisher tests.
7. Analysis of the results obtained.

The analysis of human resource provision in agriculture begins with assessment. The need of the subjects in the agrarian field for resources is mainly determined by the number and structure of employees. Evaluated provision of employers with the employees, that have necessary skills, professions and qualifications. Taking into account the above, let's determine the impact of the mentioned factors on the volume of the total product per worker in agriculture.

Table 1. The total amount of production per worker in agriculture and the dynamics of indicators affecting it

Years	Gross output per worker in agricul-ture. (Y)	Number of employed people in agricul-ture, thousand people. (X1)	Invest-ments aimed at agricul-ture, million manats (X2)	Fixed assets for agricul-ture, value, million manats (X3)	Average monthly nominal salary for agricul-ture, manat (X4)	Number of educated popula-tion living in rural areas, people (X5)	Popula-tion count in rural areas, thousand people (X6)
2007	1826	1597.6	243.3	4150.2	86.7	61528	4101.9
2008	2175	1611.3	336.5	4521.9	114.5	61915	4127.7
2009	2336	1628.6	266.6	4868.1	134.3	66932	4183.3
2010	2343	1655.0	431.0	5099.8	160.3	67563	4222.7
2011	2730	1657.4	437.3	5271.4	196.4	68505	4281.6
2012	2894	1673.8	648.8	5611.9	201.1	69542	4346.4
2013	3126	1677.4	574.3	5852.3	217.9	70244	4390.3
2014	3089	1691.7	363.9	6106.4	241.3	75338	4431.7
2015	3318	1698.4	355.4	6355.2	245.8	76409	4494.7
2016	3256	1729.6	325.1	6891.2	253.8	77404	4553.2
2017	3753	1752.9	617.8	7141.2	261.5	78387	4611.0
2018	3962	1769.3	764.4	7441.1	281.1	83885	4660.3
2019	4555	1720.4	769.5	8379.9	371.4	85710	4511.1
2020	4968	1696.5	520.6	8524.0	433.5	89944	4497.2
2021	5287	1732.9	341.9	9230.3	456.9	90634	4531.7

Source: Official data of the State Statistics Committee of the Republic of Azerbaijan (https://www.stat.gov.az/)

Table 2. Analysis of correlation coefficients

	Gross output per worker	Number of emplo-yed populati on	Invest-ments	Basic funds	Average monthly nominal salary	Number of educa-ted popula-tion	Number of population
Gross output per worker	1						
Number of emplo-yed population	0.768548111	1					
Invest ments	0.458283555	0.586433152	1				
Basic funds	0.989262427	0.820144516	0.450449786	1			
Average monthly nominal salary	0.989427239	0.725898465	0.389890967	0.979588223	1		
Number of educa-ted population	0.977971825	0.824774662	0.437570149	0.987650202	0.97159146	1	

Number of population	0.794803882	0.983101908	0.559117321	0.837422692	0.757248016	0.850040476	1

Source: calculated by the authors using the software MS Office Excel

The analysis of Pearson's correlation coefficients shows that each factor has an effect on the volume of the total product per person working in agriculture. The correlation coefficient for factors is higher than 0.4, Ryx1=0.768, Ryx2=0.458, Ryx3=0.989, Ryx4=989, Ryx5=0.977, Ryx6=0.794. Among them, the coefficients of factors X3, X4 and X5 are higher, which means that each person working in agriculture is more affected by the volume of gross output (Y) and there is a close relationship the cost of fixed assets, the average monthly nominal wage in agriculture and the number of educated population.

Table 3. A multifactor linear regression model

Regression statistics	
Multifaceted R (multiple R)	0.995903051
R^2 determination coefficient	0.991822888
Normalized R (normalized R)	0.985690054
The standard error	122.9869865
Observations	15

Analysis of variance					
	DF	**SS**	**MS**	**F**	**F-importance**
Regression	6	14677175.34	2446195.89	161.7234	6.61898E-08
Residue	8	121006.3907	15125.79884		
Total	14	14798181.73			

Source: calculated by the authors using the software MS Office Excel

Table 4. Results of a multivariate regression model of factors influencing gross output per worker in agriculture

	Coefficient	**Standard deviation**	**T-statistics**	**P- importance**	**Low 95%**	**Top 95%**
Intersection	2677.21116	2778.221246	0.96364	0.363445759	-3729.378518	9083.800844
X_1	-3.28499	4.230444278	-0.77651	0.459786349	-13.04041791	6.470426089
X_2	0.38479	0.238312483	1.61468	0.145043165	-0.164750747	0.934348395
X_3	0.39655	0.200196196	1.98084	0.082939932	-0.065095238	0.858211275
X_4	4.13226	2.201010688	1.87744	0.097287766	-0.943273633	9.207805864
X_5	-0.00145	0.025140132	-0.05776	0.955354017	-0.059425421	0.056521074
X_6	0.58423	1.151488654	0.50737	0.625579049	-2.071099646	3.23957555

Source: calculated by the authors using the software MS Office Excel

Let's take a look at the results obtained in MS Excel and their interpretation. Since the free limits are a=-3.28499, b=0.38479, c=0.39655, d=4.13226, e=-0.00145, f=0.58423, and the dependent variable is g=2677.21116, we get the regression, where the gross output per worker in agriculture is based on the number of employed population, directed to the agrarian area, expressing the

dependence on investment, basic funds, agricultural enterprises and service organizations, the average monthly nominal wage, the number of the population living in rural areas and the number of educated population. Taking into account the obtained results, the linear functional dependence between the gross output per worker in agriculture and the factors affecting it can be expressed by the following regression equation:

$Y=2677.21116 - 3.28499X_1 + 0.38479X_2 + 0.39655X_3 + 4.13226X_4 - 0.00145X_5 + 0.58423X_6$

According to the regression equation, a change in factor X1 by 1 unit will lead to a change in factor Y by -3.28499 units, a change in factor X2 by 1 unit will lead to a change in factor Y by 0.38479 units, and a change in coefficients X3 and X4 by 1 unit will lead to an increase of 0.39655 and 4.13226 units, respectively. Changing the coefficients X5 and X6 by 1 unit will change the coefficient Y by -0.00145 and 0.58423 units, respectively. To determine the adequacy of this result, the statistical significance of the given coefficients should be checked. To do this, it is necessary to test the following hypothesis:

$$\begin{cases} H_0: \beta_1 = 0 \\ H_0: \beta_1 \neq 0 \end{cases}$$

The above hypothesis is tested based on the following t-statistic $t_n = \frac{b_n}{S_{b_n}}$:

Table 5. t-statistics of factors influencing the volume of gross output per person in agriculture

T_1	T_2	T_3	T_4	T_5	T_6
-0.77651	1.61464	1.98080	1.87743	-0.04554	0.50736

Source: calculated by the authors using the software MS Office Excel

Critical point of the Student distribution (t-distribution): $(\alpha = 0{,}0005)$ $t_{0{,}0005;8} = 5.041$ (https://www.geeksforgeeks.org/students-t-distribution-in-statistics/). According to the calculation results -0.77651<5.041, 1.61464<5.041, 1.98080< 5.041, 1.87743< 5.041, 0.50736<5.041 the coefficients of the variables X1, X2, X3, X4, X5, X6 are statistically significant.

In order to determine the real role of factors affecting the volume of gross output per worker in agriculture, it is necessary to use absolute indicators as well as relative indicators. The elasticity coefficient is considered one of the absolute conditions of the analysis in terms of determining this dependence. If the elasticity coefficient is less than 1, the effect on the resulting factor is not considered high. Based on the linear regression equation, the elasticity coefficient, which expresses the percentage change of the dependent variable as a result of a 1% change in the independent variable, can be calculated based on the following formula:

$$E = \frac{x_{\times}\bar{x}}{\bar{y}}$$

Table 6. Elasticity of factors affecting the volume of gross output per person in agriculture

Gross output per worker	Number of employed people in agricul-ture, thousand people	İnvestment, million manats	Basic funds, million manats	Average monthly nominal salary, manat	Number of educated popula-tion, people	Number of popula-tion, thousand people
1%	-1.8%	0.1%	0.8%	0.3%	-0.05%	0.8%

Source: calculated by the authors using the software MS Office Excel

Looking at the results in Table 6, we can note that a 1% increase in the number of the population engaged in agriculture will lead to a -1.8% decrease in the total output; the 1% increase in investment in the agricultural field and the value of fixed assets respectively will lead to a 0.1% and 0.8% increase in gross output per employee. A 1% increase in the average monthly nominal wage in agriculture, the number of educated population and the number of rural population respectively can result in a change of 0.3%, -0.05% and 0.8%.

Since the correlation coefficient between the indicators for the studied period is $r = \sqrt{R^2} = \sqrt{0.9857} = 0.9928$, based on r=0.9-0.99 on the Chaddock scale (T.A. Yadigarov, 2019), there is a very high correlation dependence between the number of educated population, the number of employed population, investment, value of fixed assets and wages.

The coefficient of determination R – square = 0.9918 shows that the approximation is quite high. The coefficient of determination R2= 0.9918 means that the corresponding regression equation explains 99.2% by the influence of the dispersion indicators, and 0.8% of the variance is explained by the influence of other factors. The high coefficient of determination indicates that the regression equation expresses the initial data better and that the greater part (99.2%) of the resulting factor is explained by the factors included in the model.

Since the significance is F~6.61898E-08, the regression model is valid under the condition of $p < 0.05$.

The statistical significance of the regression equation obtained with the help of the F-Fisher criterion in the EXCEL program is determined by comparing it with the F-Fisher criterion, F_table (a;m;n-m-1). As can be seen from Table 3, F-statistic (Fisher's criterion) = 161.7234. In this case, if we determine the Ftable with the help of the formula Ftable (a; m; n − m − 1) = Disagreement, with a significance level of α=0.05 with a 95% confidence interval, we get the following result:

$F_{cədvəl}$ (a; m; n − m − 1) = Disagreement (0,05;6;8) = 3.58
(https://socr.umich.edu/Applets/F_Table.html#FTable0.05).

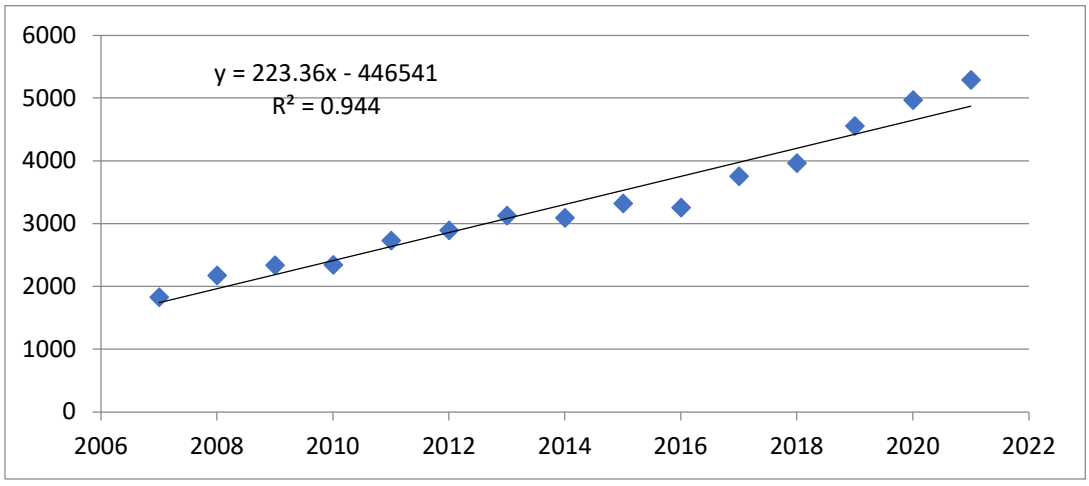
When comparing the F-Fisher criterion with the Ftable (a; m; n − m − 1) value, it can be seen that the F-Fisher criterion > Ftable (161.7234>3.58). This means that the regression equation as a whole is statistically significant. This means the adequacy of the established model.

The correctness of the characteristics of the established model can be checked based on the autocorrelation results. In this regard, it is determined in accordance with the formation of the conclusion of the existence of autocorrelation according to the criteria of Darbon-Watson statistics. Let's check the formation of the conclusion about the existence of autocorrelation according to the criteria of Darbon-Watson statistics based on the Darbon-Watson crisis points. The breakpoints of the Darbon-Watson statistics for six explanatory variables m=6 and n=15 observation periods covering 2007-2021, based on a 95% confidence interval, at a significance level of α=0.05 will be as follows: (Orucov H.D., Hasanli Y.H., Valiyev V.M. 2009).

$$d_l = 0.447 \;\; d_u = 2.471$$

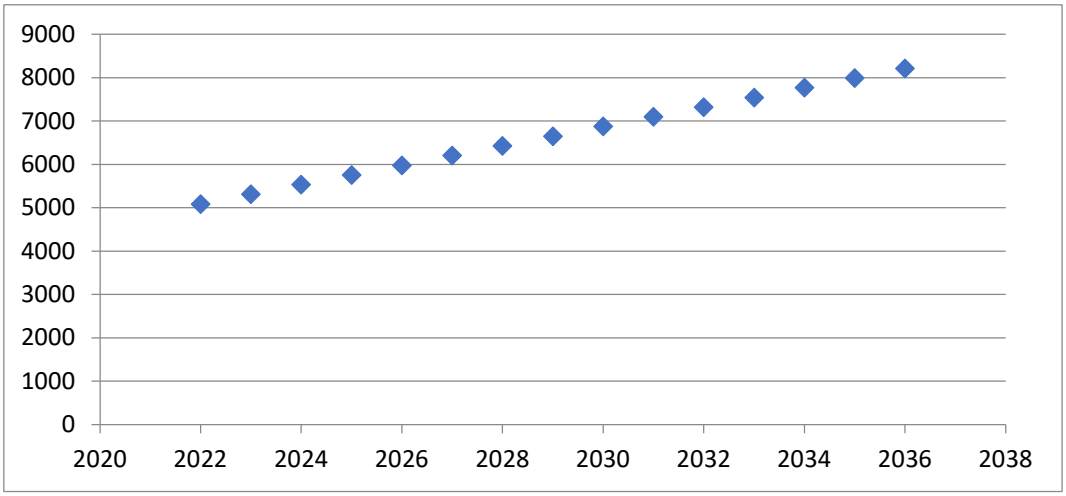
It is known that according to the Darbon-Watson criteria, if $4 - d_l \leq DW < 4 - d_u$, the conclusion
about the presence of autocorrelation between the indicators is considered uncertain. If $d_u \leq DW <$
$4 - d_l$, this means that there is no autocorrelation in the model
(https://www.investopedia.com/terms/d/durbin-watson-statistic.asp). In this regard, since $d_l = 0.447 \leq DW = 0{,}767 < 4 - d_u = 1.471$, there is no autocorrelation between the researched indicators. This means that the regression equation as a whole is statistically significant.

Now let's look at a graphical representation of changes in labor productivity using a trend line. The linear dependence on the total output per worker during the observation period shows that the level of approximation accuracy is at the level of 94% (the higher the indicator, the more accurate the dependence): $R^2 = 0.994$. The resulting equation allows us to calculate the forecast for the following years:
Y=223.36x-446541 [graph 1].



Graph 1. Linear dependence of labor productivity on years.

Using the equation, we can predict labor productivity for 2022-2035.



Graph 2. Forecast indicators of labor productivity.

Studies show that the efficiency of using human resources depends significantly on the work environment, the level of labor stimulation, career opportunities, and mutual relations. Considering that some of the mentioned issues are not expressed in quantity, for this purpose it is possible to determine the employee's satisfaction with his work and labor on the basis of a questionnaire. This questionnaire was developed by the authors in order to find out the factors that cause employee dissatisfaction. The questionnaire is divided into 10 blocks of two questions each. Each block of questions characterizes the attitude of a certain employee to the factors affecting his work performance.

Table 7. Questionnaire

1. Work environment	
1. Are you satisfied with your workplace? A) Yes B) Partially C) No D) Does not want to answer	2. Are you satisfied with the current work schedule? A) Yes B) Partially C) No D) Does not want to answer
2.Salary	
3. Are you satisfied with your salary? A) Yes B) Partially C) No D) Does not want to answer	4. Do you receive sufficient social benefits, bonuses or compensation? A) Yes B) Partially C) No D) Does not want to answer
	3. Career opportunities
5. Does your company create opportunities for career advancement? A) Yes	6. Is desire to improve the level of professionalism encouraged in your company?

B) Partially C) No D) Does not want to answer	A) Yes B) Partially C) No D) Does not want to answer
	4. Ethics relationships in the organization
7. Do employees follow informal rules and behaviors in the organization? A) Yes B) Partially C) No D) Does not want to answer	8. Do you apply formal rules and procedures? A) Yes B) Partially C) No D) Does not want to answer
5. Organization environment	
9. Has informal communication developed in the enterprise? A) Yes B) Partially C) No D) Does not want to answer	10. Komanda heyətinizdə münaqişələr tez-tez olur? A) It never happens B) Rarely C) Often D) Does not want to answer
6. Use of potential	
11. Can you make your own decisions? A) Yes B) Partially C) No D) Does not want to answer	12. Do you get more work due to your commitments? A) Yes B) Partially C) No D) Does not want to answer
7. Individual characteristics	
13. Are you ready to work harder for your professional development? A) Yes B) Partially C) No D) Does not want to answer	14. Are you ready to make decisions and take responsibility? A) Yes B) Partially C) No D) Does not want to answer
8. Individual needs	
15. Are your personal needs met? A) Yes B) Partially C) No D) Does not want to answer	16. How your secondary needs satisfied? A) Absolutely B) Partially C) No D) Does not want to answer
9. Motivation	
17. Do you receive a motivational reward? A) Yes B) Partially C) No D) Does not want to answer	18. Do you receive a psychological award for work and creative activity? A) Yes B) Partially C) No D) Does not want to answer
10. Education	

19. Do you have sufficient education for your position? A) Yes B) Partially C) No D) Does not want to answer	20. Does the enterprise where you work create conditions for improving your knowledge and skills? A) Yes B) Partially C) No D) Does not want to answer

Source: The table was created by the authors

The evaluation of the results is carried out separately for each indicator and each unit. The answer is estimated as A−10, B – 9, B – 6, C – 0. The average score for the block is below 7, which describes the frustration of the employees in the studied factors. For a more detailed analysis, it is useful to prepare a detailed questionnaire on the factors that cause employee dissatisfaction.

In the proposed questionnaire, the investigation of employee satisfaction was conducted in the "Pomegranate producers and exporters" Production Cooperative. 15 employees participated in the questionary. Employees are asked to answer 20 questions in the survey. Then the results were accepted, the authors evaluated the given answers accordingly and determined the scale of the proposed options. For a more accurate comparison of the results, an average value is taken. Average grade is calculated for each question and block. The average value is calculated according to the following formula:

$$\bar{X} = \sum b_{ij}/\mathrm{n}$$

Here, $\overline{X}$ - is the average value, b_{ij}- j is the evaluation of employee number i of the number factor j (on a 10-point scale), n - is the number of requests. The results of the questionary are presented in Table 8.

Table 8. Questionary results

The name of the block	The number of question	Employees of the enterprise										Average price	Average price
		1	2	3	4	5	6	7	8	9	10		
Work environment	1	10	10	10	9	10	9	10	10	10	9	9.7	9.75
	2	10	10	9	10	9	10	10	10	10	10	9.8	
Salary	3	9	10	10	10	9	10	10	10	10	9	9.7	9.7
	4	10	9	10	10	10	10	10	10	9	9	9.7	
Career opportunities	5	9	10	10	9	9	10	10	10	10	9	9.6	9.65
	6	10	10	10	10	9	9	9	10	10	10	9.7	
Ethics relationship	7	10	9	9	10	6	9	9	6	9	9	8.6	9.15
	8	10	10	10	10	9	10	9	10	9	10	9.7	
Organization environment	9	9	9	9	10	6	6	9	6	6	9	7.9	8.65
	10	10	10	9	9	10	9	9	9	10	9	9.4	

Use of work potential	11	9	9	9	10	10	9	9	9	10	9	8.3	8.9
	12	9	9	10	10	10	9	10	10	9	9	9.5	
Individual characteristics	13	9	9	9	10	10	9	10	9	10	10	9.5	9
	14	6	6	9	10	9	6	9	10	10	10	8.5	
Individual needs	15	10	10	10	10	9	9	10	10	10	10	9.8	9.1
	16	9	9	9	9	9	6	9	6	9	9	8.4	
Motivation	17	10	10	9	9	10	9	10	10	10	10	9.7	9.55
	18	10	10	9	9	10	9	9	9	10	9	9.4	
Education	19	10	10	9	10	9	9	9	9	10	10	9.5	8.7
	20	10	9	9	6	9	6	6	6	9	9	7.9	

Source: The table was prepared by the authors

The results of the survey show that the employees of the analyzed enterprise are satisfied with social-psychological aspects. They say that there is informal communication, the poor development of information technology reduces the efficiency of information dissemination. Employees have a desire to acquire knowledge and skills, but are not adequately supported by the organization. This problem should be studied widely. Examining and implementing employee career development programs is an important factor in improving work efficiency in the enterprise. The level of satisfaction of secondary needs by the enterprise is low, in order to solve this problem it is important to study their reasons and take measures in this direction.

Conclusions

The analysis of the current level of effectiveness and efficiency of the use of human resources in the agricultural field shows that the obtained results are formed on the basis of the impact of various factors on the use of labor force and the criteria that directly affect the working capacity of employees. Our research shows that the increase in the level of labor force provision does not yet reflect the efficiency of its use. Thus, the accounts showed that the volume of the total product decreased in the conditions of the increase in the number of the population engaged in agriculture. The increase in investment in the agricultural field and the value of the main funds caused an increase in the corresponding labor productivity. The average monthly nominal wage in agriculture and the number of educated population also had a positive effect on the results. Based on the results of the survey, it is possible to see that the non-quantifiable criteria play an important role in the effectiveness of the use of labor force. Based on the calculations and the results of the questionnaire, it can be said that the effectiveness of the use of labor resources in the agricultural field in recent years has been generally satisfactory. All this shows that the forecast indicators for the next years will change in a positive direction.

Summarizing what has been mentioned, the improvement of ethics relationship in the direction of increasing the effectiveness of the use of labor force in the agricultural field, the stimulation of the use of work capacity potential, paying special attention to the satisfaction of personal needs, and raising the education level can be highlighted as important issues to be solved. Considering that

an increase in investment and the value of fixed assets, an increase in the average monthly nominal wage and the level of education are important conditions for increasing labor productivity in the agricultural field, in this case it is correct to defend the opinion that sustainable measures in these areas are particularly important.

Acknowledgements: We thank the management of the "Pomegranate producers and exporters" production cooperative for creating favorable conditions for conducting the survey for research purposes.

Conflict of interest: None

REFERENCES

1. Amrakhov, V.T. (2014). Improvement of the economic mechanism of the structural policy of the state in the agricultural market. Life Science Journal. 11.(10s). 471-476
2. AMRAHOV, V., MAHMUDOV, E., ALIYEV, S., & HAJIYEVA, S. (2022). ECONOMETRIC ANALYSIS AND ASSESSMENT OF FACTORS AFFECTING THE EFFICIENCY OF AGRICULTURAL PRODUCTION. *Scientific Papers: Management, Economic Engineering in Agriculture & Rural Development*, *22*(3).
3. Amrahov, V.T. (2015). The institutional aspects of the formation of agricultural market. Theoretical & Applied Science. 10 (30): 72-74.
4. Babenko, A., Vasilyeva O. (2017). Factors Of Labour Productivity Growth In Agriculture Of The Agrarian Region. Baltic Journal of Economic Studies
5. Bryson, J. M. (2018). *Strategic planning for public and nonprofit organizations: A guide to strengthening and sustaining organizational achievement*. John Wiley & Sons.
6. Gusev, A.Y., Koshkina, I.G. (2021). Labour productivity in the agricultural sector of the national economy is a key factor in the rise of production efficiency. IOP Conference Series: Earth and Environmental Science.
7. Gylfason, T. (2001). Natural resources, education, and economic development. *European economic review*, *45*(4-6), 847-859.
8. Hajiveya S.İ. The Role Of Staff Potential In The Improvement Of Agricultural Development Directions. International Forum: Problems And Scientific Solutions Melbourne, Australia. 2022
9. Jausàs, A. (Ed.). (2011). *Labour Law: A Practical Global Guide*. Globe Law and Business.
10. Kudryavtseva, O. (2012). The oretical approaches to definitions" labour potential of the person"," manpower"," labour". *Russian Journal of Agricultural and Socio-Economic Sciences*, *1*, 31-38.
11. Makarová, V. (1998). The interpreter as intercultural mediator (Doctoral dissertation, University of Warwick)
12. Orucov, H., Hasanli, Y., & Valiyev, V. (2009). Linear algebra and economic models. *Baku, Publication of Caucasus University*.

13. Rofe, A. I. (2010). Labor economics: textbook. *M.: KNORUS*, *400*.
14. Smirnova, E. A., Postnova, M. V., & Zotova, G. G. (2019). Assessment of factors of increasing labor productivity in the region. *Bulletin of Agrarian Science*, (6), 135-144.
15. Stijns, J. P. C. (2005). Natural resource abundance and economic growth revisited. *Resources policy*, *30*(2), 107-130.
16. Tofiq, V. A., Gabil, N. M., Zahid, M. T., Jabbar, R. M., Vahid, A. H., & Haji, M. K. (2023). Modeling and Forecasting of Production an Agricultural Product. *Journal of Law and Sustainable Development*, *11*(7), e625-e625.
17. Upreti, P. (2015). Factors affecting economic growth in developing countries. *Major Themes in Economics*, *17*(1), 37-54.
18. Yadigarov, T. A. (2019). Operations research and solution of econometric problems in MS Excel and EViews software packages: Theory and practice. *Baku: Europe Publishing House*.
19. Zharkeshova, A. S., Kirdasinova, K. A., Amalbekova, G. Y., Bekmukhametova, A. B., Dabyltayeva, N. E., & Tauassarova, A. K. (2017). Development and Management of Public Services in Kazakhstan. *Journal of Economic & Management Perspectives*, *11*(2), 770-779.
20. Zaslavskaya, T. I., & Ryvkina, R. V. (1974). Metodologicheskie problemy sotsiologicheskogo issledovaniia mobil'nosti trudovykh resursov [Methodological Problems of Sociological Research of Labor Resources Mobility].
21. https://www.stat.gov.az/
22. https://www.geeksforgeeks.org/students-t-distribution-in-statistics/
23. https://socr.umich.edu/Applets/F_Table.html#FTable0.05
24. https://www.investopedia.com/terms/d/durbin-watson-statistic.asp