

STUDY OF INNOVATIVE METHODS IN EVALUATION AND EFFICIENT PLACEMENT OF PERSONNEL COMPOSITION IN AN INDUSTRIAL ENTERPRISE

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Abstract

In this article, the development of new research methods and methods for the assessment of personnel composition, the determination of personnel resources in industrial enterprises, as well as the issues of their efficient placement and bringing labor productivity to the maximum level were discussed. Thus, the selection of employees within equal opportunities based on the competition organized on the basis of certain laws, the creation of a social security system for each employee and the consideration of the effective activity and full protection of the rights of that employee during the period of operation, the continuous operation of employees, cases of absence. In order to prevent and continuously maintain development, the possibilities of conducting internal and external trainings, directing employees to appropriate maintenance activities based on effective placement, training additional reserve personnel for management positions and giving instructions based on their duties have been investigated and evaluated. The model of formation of the innovation potential of the personnel in the industrial enterprise was established and the ways of efficient use of the existing potential of the personnel were studied.

Keywords: personnel policy, personnel turnover, labor productivity, wages, personnel resources

I. Introduction

The evaluation and efficient placement of personnel in terms of composition is one of the important factors to be noted in the field of the economy as well as in the industrial enterprise in general. In general, the study of this issue and the work on this topic have been given more space in recent times. Especially if we look at the last century and the times when the industry first appeared, we can see that there was no serious approach to the study of personnel composition. This situation became widespread after the emergence and development of science and technology. The emergence of such an issue created a basis for the correct evaluation and efficient placement of personnel, the investigation of the reasons for their low productivity and improper organization of work in this direction.

Looking at the modern era compared to the previous period, we can see that the personnel policy incorporates certain radical changes as well as further development. For example, it can be noted that before, the regulation of personnel turnover was carried out in an irregular manner and without any laws or restrictions. There are a number of national factors of competitiveness, which we can attribute to highly qualified personnel and motivated workforce from material and moral point of view. In earlier times, these factors were studied in a completely different way. Because at that time, land, capital, and natural resources were dominant. We can even see it clearly during migration. If the early times were mainly based on "muscle power", nowadays "brain power" plays an important role [2].

If we look at the studies of economists, it would be more correct to start with the works of Adam Smith and David Ricardo. Thus, in 1776 Adam Smith's "Inquiry about nations and the causes of their wealth" and in 1817 David Ricardo's book "Principles of Political Economy and Taxation" noted that labor acts as an important element in the economy between the personnel potential and the value category. was done. Regarding economic relations, the opinions of Elton Mayo and F. Rosthlisberger based on their research were correctly reflected. Both economists studied for a long time the impact of the physical factors identified in the factories of the "Western Electric Company" in Chicago on the productivity of workers [7].

As a result, Mayo created the theory of "social system" and his research proved once again that the important system in enterprise organization is "social system" and its important subject is "man". In general, Mayo came to the following conclusions:

- Each employee operating in the enterprise has a unique character and is variable;
- Every economic interest does not have the main role for the spent activity;
- It is impossible to be sure that the group or groups formed in terms of a number of functions are an exemplary group [7].

It is possible to think in two ways, firstly, the low level of personnel turnover reduces the negative effects on labor productivity. The explanation of this idea is mainly explained by the direct and indirect costs, which include employee turnover. Economists justified the mentioned arguments through a number of theories. For example: the English economist Ian Shaw in his book published in 2005 under the title "Circulation, Social Capital Losses and Productivity (Performance)" linked human and capital theories. Kato and Yanadori's 2007 book "Average Employee Tenure, Voluntary Turnover Rate, and Labor Productivity" proved the idea based on organizational disruption framework theory. American economist and sociologist Gerry Becker's 2004 book, *Organizational Rules: Industry and Corporate Change*, also made a connection with Ian Shaun's theory of man and capital. In general, Berker and Shaw noted that human and capital theory have an important role in increasing the labor productivity of employees and enterprises. A more extensive explanation of this argument is provided by writers in the following format: Park and Kim 2013 "Turnover rates and organizational performance", J.B and Barney "Enterprise resources and sustainable competitive advantage", Lepak and Snell "Human resource architecture" [10].

In the book "Voluntary turnover, social capital and organizational performance", Des and Shau generally classified the damage caused by personnel turnover to the productivity of the enterprise in 2 formats:

- In general, the inability of an enterprise to positively see the result of the capital invested in employees;
- Damages caused to the competitiveness of the enterprise due to the loss of capital in terms of employees [1].

Hausnext noted that the staffing flow has caused a number of operational delays at the enterprise, which he claims have ultimately had strong operational implications. The flow of personnel directly and indirectly affects the functioning of the enterprise. As an example of an indirect way, the time and financial costs spent on hiring new replacement employees, socializing them, familiarizing them with the work environment and learning the work process, and increasing their personal development by being involved in training. Directly, we can mention missed work opportunities due to unfulfilled obligations, unfinished work, lack of personnel in the enterprise for specialties, and lack of sufficient information about the process in the replaced employees. In all of these cases, as a result, it leads to a linear decrease in labor productivity and a delay in the execution process of operations. Looking at this issue from another point of view, Ian Shaw proposed several nonlinear relationships [8].

For the first time in economics science, personnel evaluation appeared in the United States at the beginning of the 20th century. For this reason, as a number of businesses developed, new methods and methodologies, methodological approaches were formed. If we look at the evaluation of personnel in Azerbaijan for the modern era, we can see the use of a number of

methods. These methods are widely used: interview, testing, standard, self-report, descriptive, compulsory selection, etc. is attributed. Each of the mentioned methods has its own disadvantages. In an era where science and technology are developing, new methods of staff evaluation are being sought and researched. The main reason for this is to achieve a more active evaluation of self-evaluation elements.

If we look at the process of management or personnel management, a number of evaluation methods are studied in the works written by many economists. As an example of economists, M.B. Kurbatova, V.E. Khrutsky, M.I. Magura et al. I can mention the methods analyzed by them: 360-degree assessment, method of written characteristics, self-assessment, management by goals, method of rating table of behavioral relations, method of evaluating the level of observation based on behavioral observations [12].

Evaluation and comprehensive study of personnel resources in industrial enterprises is based on a certain system, which in itself combines 3 aspects. The first is the study of the ability of each employee individually and the evaluation of the ability from the point of view of objectivity. The second aspect is the determination of the appropriate requirements for the heads of any department. Finally, I would like to note that every manager prepares a personnel plan [3].

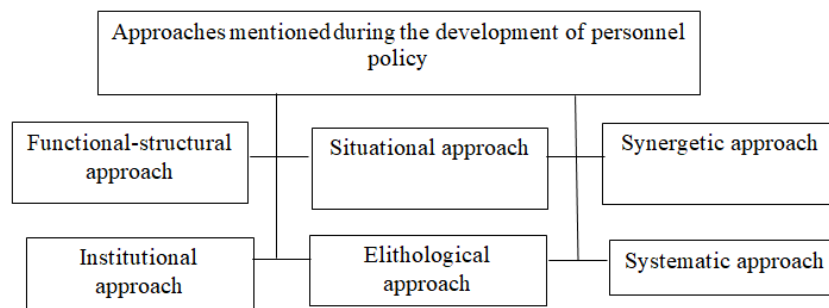


Figure 1: Directions of personnel policy development

In each tradition of statecontrol, a number of approaches are especially noted when the state's unique personnel policy is developed:

- Functional-structural approach - the role of labor resources is quite large and is aimed at the classification of functions, differentiation of the management system.

-Situational approach - at this time, the most productive effect is determined, and its determination is carried out on the basis of a specific situation. The form of influence determined at this time is evaluated as the form of influence corresponding to the current situation.

-Synergetic approach - firstly, the principle of self-organization is taken as an important quality characteristic.

- Institutional approach - research is given a wide place and its object is industrial enterprises and their aggregates, which play an important role in the development of personnel policy.

- Elitological approach - the study of the approach is directly related to the study of the concept of "elite". At this time, the study of officials, officials, and government officials is carried out in separate groups.

- Systematic approach - the state studies the elements that form its system and the qualities associated with it in the form of an integrative system [5].

When we study and research human resources in the field of economy, we can note the use of various methods and methods in personnel evaluation. Figure 2 shows the performance evaluation methods.

One of the main goals of every enterprise is to improve labor productivity and take a leading position in a competitive environment. For this, a strategic plan should be prepared properly.

- In any company, there is a need to ensure effectiveness and plan the training process, which is diverse across sectors. The use of the "Efficiency analysis and training planning"

methodology in the company or any enterprise together with a number of official and unofficial documents made it possible to achieve certain results: təlim planının formalaşdırılması;

- determination of training priorities;
- collection, analysis and generalization of training needs of the structural unit;
- making changes to the training catalog;
- evaluation and analysis of the effectiveness of the training and development process [9].

When applying the mentioned methods, the Target operating model, Talent Management Concept, etc. the methodology is considered as the main document and the methodology plays an important role during the implementation of a number of processes. Here are some important factors to consider:

- training needs that have arisen in accordance with the requirements of any individual development plan;
- training needs resulting from the analysis of the company's predetermined strategy and development plan;
- Making necessary changes in the analysis of the results during the assessment of training effectiveness and the training needs that may arise as a result of it;
- Training needs that have arisen after the analysis of training on various indicators collected from a number of units based on previous periods.

Monitoring results play a key role when efficiency is analyzed. At this time, feedback requests should be taken seriously [4].

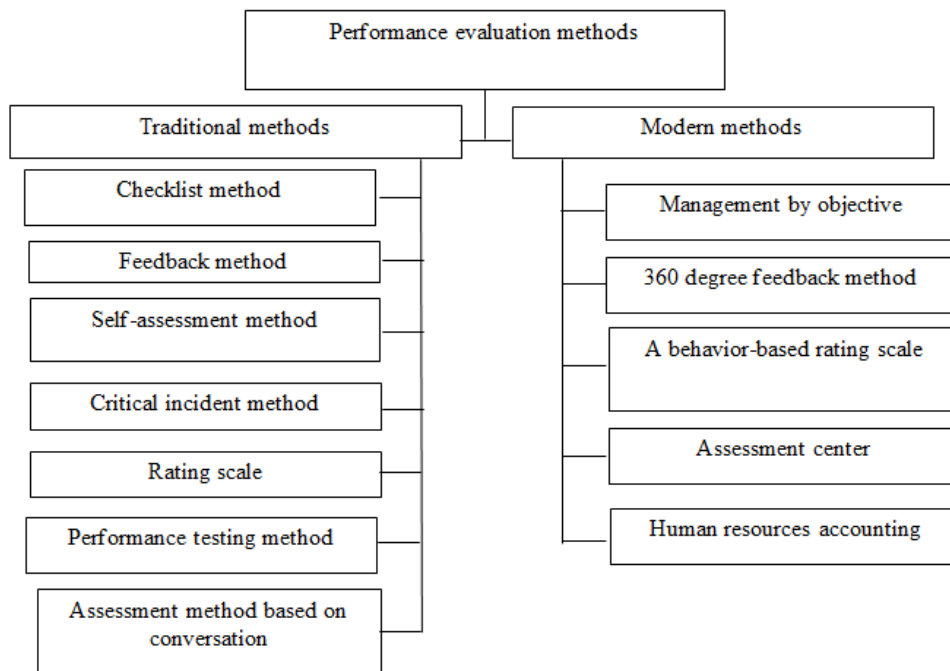


Figure 2: Performance evaluation methods

We get the following model based on the number of employees in the industrial enterprise and the costs incurred for the development of personnel, the volume of production for years.

Based on the MS Excel program, the coefficients of the linear regression equation between the number of employees, the volume of production, wages and other similar social payments and labor productivity in SOCAR are obtained as follows:

$$a_0 = 874,2; a_1 = -0,0186; a_2 = 1,85; a_3 = 0,255$$

So the regression equation we are looking for will be:

$$y = -0,0186X_1 + 1,85X_2 + 0,255X_3 + 874,2 \tag{1}$$

According to the Excel program, between the number of employees in SOCAR, the volume of production, wages and other social payments equivalent to it, and labor productivity, expressed by the linear regression equation $y = -0.0186X_1 + 1.85X_2 + 0.255X_3 + 874.2$, functional there is a high correlation relationship very close to dependence ($R^2 = 0.99867$). The degree of dependence between indicators According to the Chaddock scale, the quantitative indicator of relationship density in the range of 0.9-0.99 means that the qualitative characteristic of the strength of relationship dependence is quite high [6].

Table 1: Dynamics of factors affecting labor productivity at SOCAR "Azneft" PU over the years

Years	The number of employees (person)	Volume of production (tonns)	Wages and other payments (mln. Man.)	Labor productivity
2013	70901	54403408,5	662,67	767,3151084
2014	65568	65518306,26	660,39	999,2421038
2015	56460	60324885,39	597,62	1068,453514
2016	52576	66055570,2	563,68	1256,382574
2017	50933	68087692,82	595,68	1336,809
2018	50122	85545156,24	628,14	1706,738682
2019	50332	91434932,16	682,15	1816,636179
2020	51092	106135780	763,18	2077,346355
2021	50968	99329125,2	821,49	1948,852715
2022	48254	88692674,88	787,35	1838,037777

According to the established relationship equation, it can be concluded that with one unit increase in the number of employees in SOCAR, labor productivity decreases by 0.02 units, with one unit increase in production volume, labor productivity increases by 1.85 units, wages and equivalent One unit increase in other social payments results in an increase in labor productivity by 0.255 units.

As can be seen, according to the obtained table, model (1) is statistically significant. This significance is primarily explained by the fact that the coefficients of the free variables X and the free threshold C are significantly higher than their standard errors. It should be noted that the elasticity coefficient is calculated based on the following formula, expressing the percent increase or decrease of the dependent variable due to the 1% increase of the independent variable X included in the model [6].

$$E = \frac{\alpha_i \times \bar{x}_i}{\bar{y}} \quad (2)$$

Here, α_i are the coefficients of the above relationship equation. \bar{x}_i is the average of the number of employees, the volume of production, wages and other similar social payments and labor productivity in SOCAR for the studied periods. The elasticity coefficients calculated based on those indicators will be as follows according to the established model.

$$E_{n.e.} = \frac{\alpha_1 \times \bar{x}_1}{\bar{y}} = \frac{-0,0186 \times 54720,6}{1481,581401} = -0,68716 \quad (3)$$

$$E_{v.p.} = \frac{\alpha_2 \times \bar{x}_2}{\bar{y}} = \frac{1,85 \times 78552753,1}{1481,581401} = 0,980819215 \quad (4)$$

$$E_s = \frac{\alpha_3 \times \bar{x}_3}{\bar{y}} = \frac{0,25 \times 676,235}{1481,581401} = 0,116314049 \quad (5)$$

The calculations show that with a 1% increase in the number of employees in SOCAR, a 0.69% decrease in labor productivity, a 1% increase in the volume of production, a 0.98% increase in labor productivity, and a 1% decrease in wages and other similar social payments. increase results in a 0.12% increase in labor productivity.

Figure 3 shows the production volume forecast model for the next 10 years in SOCAR "Azneft" PU, taking into account the number of employees.

Regardless of the sphere of activity, every enterprise wants the development of its personnel potential to be more extensive and modern, but for this, of course, the unique potential of its personnel should be evaluated. In addition to these, it is possible to mention the use of a number of models that are widely used in modern times. As examples of these models, it would be more correct to mention ADDIE and Bloom Taxcomony.

The essence of the ADDIE model is the planning of learning experiences and their implementation by developers and instructors. In terms of content, the model itself combines 5 parts: analysis, design, development, implementation, evaluation. This model includes stages in itself and assumes their consistent, orderly implementation [10].

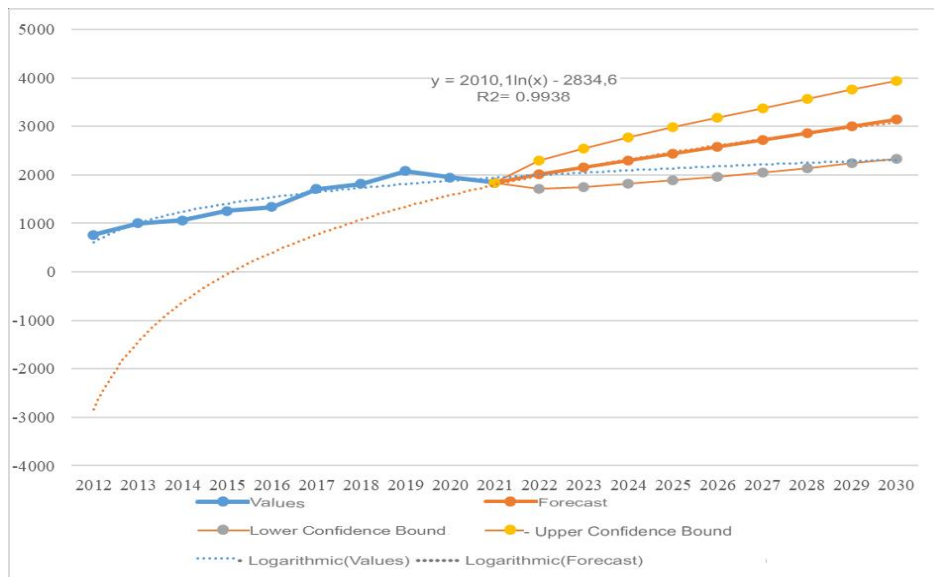


Figure 3: Analysis of the production volume in SOCAR "Azneft" BU for the next 10 years in terms of the number of employees

1. Analysis – initially the current situation should be analyzed and the gaps should be filled. For this, it is important to know where everything is prepared. According to the analysis, the qualitative analysis is specifically distinguished in that it enables the identification of goals and objectives for learning.

2. Design – decisions related to the creation of learning programs are made after all the information in the analysis is considered. It requires acceleration in terms of time and attention plays an important role.

3. After the content ideas are decided in the development-design stage, the implementation of those content ideas can be started. At this time, videos are written, graphics are created, fonts and colors are taken care of, visual design is done, etc.

4. Implementation - it is time for employees to complete the course after all the work is completed during the training. At this time, attention is paid to whether they face any problem or whether everything goes well.

5. Evaluation - finally, the evaluation process is carried out and the extent to which employees are satisfied and dissatisfied with the training is comprehensively studied.

Advantages of the ADDIE model: simple measurement of time and costs; to be more effective for learning; plays an important role for a number of models; widely accepted and used globally.

Disadvantages of the ADDIE model: it does not allow repetitive design; it takes a lot of time and is expensive; it is a rigorous process in terms of consistency; it is slower to adapt to sudden project changes.

Bloom's Taxonomy is basically a system that categorizes a set of dominant skills into specific domains of requirements. At this time, it is learned from the simplest skill to the most complex skill. If we look at the history of Bloom's Taxonomy, it was created in 1954 by Benjamin Bloom and his allies Walter Hill, Edward Furst, Max Englehart, etc. mentioned in the book "Taxonomy of Educational Objectives" published by others. So, the main factors that are important to note are based on the order of cognitive skills: understanding, knowledge, application, analysis, synthesis, evaluation. Bloom's taxonomy emphasizes 3 levels to study:

- Cognitive learning is the process of acquiring knowledge based on certain cognition and their mental skills.

- Affective learning - includes the development of certain feelings and a number of emotional areas, learning to analyze and explore them.

- Psychomotor learning - in this case, physical and experiential skills are considered as an important factor, which requires some time to be studied as a broad process.

As a result, it can be noted that this process or theory is intended to be applied in the enterprises of many countries. It is more desirable to apply Bloom's Taxonomy for future periods. However, work is being done in the direction of the development of the theory, in which the existing techniques and technologies of the time are taken into account[11].

One important factor to emphasize is the staffing process. As a definition of the process, it can be noted that it means placing the employee in departments or positions, taking into account his personal qualities. A number of aspects should be considered during deployment. It is very important to correctly determine the demand of organizations, enterprises, and firms for certain tasks for the future period. Even if the requirements for specialists with diplomas are determined, the use of a number of methods during forecasting is especially valued:

1. Normative method - volume of production, volume of work, labor standards intended for specialists

2. Staff nomenclature method - increase and decrease in the number of positions, qualifications based on positions, staff tables

3. Staff nomenclature method - increase and decrease in the number of positions, qualifications based on positions, staff tables

One of the nuances that is important to note is the identification of high- and very-high-important tasks during the placement of personnel. For this, the enterprise develops a certain methodology. The methodology defines appropriate solutions and methods of their application in order to implement the process of identifying high and very high importance tasks. This document is an integral part of the "Training of Attendees" methodology. During the implementation of the process of training participants, the use of the methodology "Determination of high and very high importance tasks" together with other related documents will serve to achieve the following results:

- Determination of high and very high importance tasks;

- Approval of the catalog of high and very high importance positions for the Company;

The following documents were used in the development of the methodology: concept of talent management; target operating model; charts for identifying high priority tasks for training followers; project solution on the main provisions; project solution for training followers. Metodika üzrə hədəf qrupları aşağıda göstərilmişdir:

- Specialist in the training of trainees;

- A specialist performing the functions of an IR partner

- Heads of structural units;

- Business experts;

- Employees working in high and very high importance positions.

During the development of the methodology, the concept of Talent Management, Target Operating Model, process diagrams and project solutions were based. In case of inconsistency between the methodology and the above-mentioned documents, the methodology is taken as the main document and is referred to during the implementation of the processes.

II. Conclusion and recommendations

1. The conducted regression calculations show that a 1% increase in the number of employees in SOCAR, a 0.69% decrease in labor productivity, a 1% increase in the volume of production, a 0.98% increase in labor productivity, and a 1% increase in wages and other similar social payments % increase and results in 0.12% increase in labor productivity.

2. Based on the dynamics of changes in the number of employees for 10 years, a model for forecasting the production volume was proposed for SOCAR "Azneft" PU, which is the research object.

3. Regardless of the sphere of activity, the unique potential of each enterprise's personnel should be evaluated so that the development of personnel potential is broader and more modern. For this purpose, it is more correct to use ADDIE and Bloom Taxonomy models.

4. Taking into account the employee's personal qualities, a methodology is proposed for determining high and very important tasks during his placement in departments or positions and personnel placement.

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