

ICEST 2021**II International Conference on Economic and Social Trends for Sustainability of Modern Society****PERSONNEL POLICY OF THE ORGANIZATION IN THE
DIGITAL ECONOMY**

N. A. Bezrukova (a), E. Z. Klimova (b)*, I. A. Pavlova (c), T. N. Tsapina (d)

*Corresponding author

(a) Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia, bezrukova1905@mail.ru

(b) Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia, mikhe-elena@yandex.ru

(c) Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia, irapavlova@mail.ru

(d) Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia, tsapina@mail.ru

Abstract

The manufacturing sector and maintaining the technological level is an important task for the development of the economy, the service sector, ensuring the growth of incomes and national welfare. In order for a country not to occupy the last place in the global digital economy, it is necessary to pay attention to the opportunities that it has in the field of production, innovation, employment and work with personnel. Digitalization is changing the approaches to the implementation of personnel policy, thereby increasing the need for personnel who can integrate these technologies into their activities. The aim of the study is to analyze approaches to the implementation of the organization's personnel policy in the context of the digitalization of the economy and to develop an algorithm for its formation based on the criteria for motivating personnel in the digital environment. The study used methods of structural and stylistic analysis, a comparative method when comparing approaches to the implementation of personnel policy of domestic and foreign authors, an assessment of trends in the consequences of digitalization for the domestic and European economy, regression analysis in identifying the relationship between the amount of wages and individual indicators of the organization's work, the formation of personnel policy, tabular and graphical methods of visualization of calculations, methods of induction and retention in the formation of research conclusions. The result of the study is an algorithm for the formation of the personnel policy of the enterprise based on the factors of personnel motivation in the digital environment.

2357-1330 © 2021 Published by European Publisher.

Keywords: Personnel policy, digitalization, personnel, model

1. Introduction

The leading characteristic of the modern economy development is the rapid increase in the digital divide, which creates the danger of an ever-widening lag behind developed countries. And this primarily concerns Russia.

For many countries around the world, population aging is a serious problem, in particular in Japan's manufacturing sector, about 35% of the available labour force is about to retire soon and organizations will face the problem of widening the knowledge gap.

The aging workforce around the world is driving the need to combine multiple generations of employees in the workplace: Digital Aboriginal and Baby Boomers, Gen X, Millionaires and GenZs make the company's HR policy more dynamic than ever before.

Thus, conducting a study on the analysis of approaches to the implementation of the organization's personnel policy in the context of the digitalization of the economy and the development of an algorithm for its formation based on the factors of motivating the organization's personnel in the digital environment is timely and relevant.

2. Problem Statement

The personnel policy of the company is a holistic strategy for working with personnel and ensures high quality of personnel, therefore, its competent management is a key area of work.

The works of many scientists are devoted to the analysis of personnel policy in the organization, for example, Boxall et al. (2007) characterize human resources as the basis of resource-oriented strategic HRM. This approach emphasizes that investing in human resources adds value to the organization. In accordance with the strategic goal of the company's development within the framework of the resource approach, it is necessary to create firms that would be more intelligent and flexible than their competitors.

Delery and Doty (1996) analysed the following strategic practices of personnel management in the formation of personnel policy: internal career ladders, implementation of personnel training systems based on performance assessment, job security, etc.

Schuler and Jackson (1987) argued, that in order to achieve the maximum effect, it is necessary to compare the role characteristics of personnel in the organization with the preferred development strategy.

Dyer and Reeves (1995) noted that the effectiveness of personnel depends on their abilities and motivation, that is, within the framework of personnel policy it is needed to carry out work in these areas, including selecting personnel, training them, using financial and non-financial incentives.

Let us analyze the approaches of domestic authors to the analysis of personnel policy.

Kibanov et al. (2012) characterizes personnel policy as a strategy for working with employees, including various forms, methods and areas of work to create a highly professional and cohesive team.

Bazarova and Eryomina (2012) characterize HR policy as the main philosophy of the organization's work with personnel for the optimal balance of personnel renewal and retention based on market requirements and legislation.

Odegov et al. (2017) emphasize that the development of personnel policy is carried out in order to preserve and develop personnel potential and is a key area of work with human resources, based on the organizational and economic mechanism of personnel management.

Starodymova and Samokhvalova (2012), considering personnel policy as a specific activity, highlight its dynamic and statistical components. Statistical ones include the fundamental foundations of personnel policy, the formation of a personnel management system, and dynamic ones include the implementation of personnel policy in specific conditions.

Thus, the authors' approaches to the formation of personnel policy are based on the use of various approaches and methods, but they all agree that strategic personnel management is a functional subsystem that ensures the implementation of the general strategy of the organization and is aimed at the development and accumulation of the intellectual capital of the organization. However, the presented works do not show the role of digitalization and the possibility of taking into account its capabilities in the formation of the organization's personnel policy.

3. Research Questions

In the course of the research, it is necessary to consider the following issues: to analyze the approaches to the implementation of personnel policy of domestic and foreign authors; assess the implications of digitalization for the domestic and European economy; conduct a regression analysis to identify the relationship between the amount of wages and individual performance indicators of the organization that affect the formation of personnel policy; to formulate the main stages of the algorithm for the formation of the personnel policy of the enterprise based on the factors of personnel motivation in the digital environment.

4. Purpose of the Study

The purpose of the study is to analyze approaches to the implementation of the organization's personnel policy in the context of the digitalization of the economy and to develop an algorithm for its formation based on the criteria for motivating personnel in the digital environment.

5. Research Methods

In the course of the study, methods of structural and stylistic analysis were used, a comparative method when comparing approaches to the implementation of personnel policy of domestic and foreign authors, an assessment of trends in the consequences of digitalization for the domestic and European economy, regression analysis in identifying the relationship between the value of wages and individual indicators of the organization's work shaping personnel policy, tabular and graphical techniques for visualizing the calculations, methods of induction and deduction in the formation of the conclusions of the research.

6. Findings

To fully cover these aspects, it is necessary to establish how the organization's personnel policy is interconnected with the economic growth and production capabilities of the country. It is known that the potential for economic growth determines the production capabilities of the country, which form different levels of production capabilities (Figure 1).

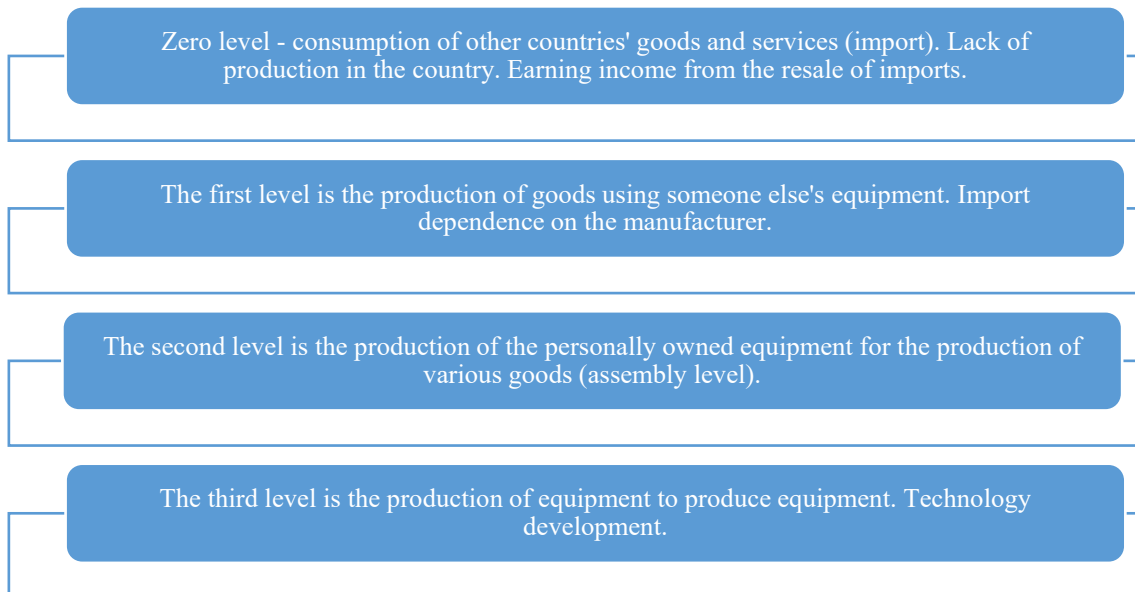


Figure 1. Levels of production opportunities in the country's economy

The development of technologies is carried out by the rich countries themselves and the most influential economies, which are called industrial states, on which the countries-consumers of these developments depend. Proprietary technologies are capable of ensuring rapid industrial growth at all levels, as well as economic independence and information security. Countries that depend on imported technologies are forced to remain on the periphery of the developed world (Prizhennikova, 2020).

Today, there is a rapid pace of reindustrialization of technologically developed countries in new directions (additive technologies (3D printing), robotics, renewable energy, etc.). The development and implementation of these technologies is the result of the work of personnel, therefore, work with personnel is a key area of work in the framework of digitalization.

The socio-economic consequences of digitalization are no less important. The displacement of a person from industry, agriculture and services cannot but have systemic consequences.

Objective automation processes, even if they are restrained by governments and society, are starting to accelerate and quite possibly will reach the limit when only a few million highly qualified professionals will be enough to support the entire global production and logistics system. In this sense, the reduction of available jobs in the world economy, the emergence of a whole class of “superfluous” people, total retraining of personnel, the destruction of the usual mechanisms of “guarantees of the future” (a decent

pension, guaranteed social protection, etc.) - it is quite possible to assess as a revolution (Kuzmich & Yakimovich, 2021).

The impact on the workforce of technology and automation developments is predictable. This process is complex because it is not about innovative technologies, but about how people are going to use them. Thus, a personnel policy for attracting qualified personnel, their rotation, training is the basis for the operation of a competitive enterprise in the digital economy (Tsapina & Bezrukova, 2017).

It is estimated that no country currently has an officially adopted strategy for adapting to future changes, and governments trying to develop effective strategies for the digital economy are faced with priorities that are constantly changing (Demchenko & Simaeva, 2020).

Digitalization significantly affects employment and the labour market, in particular, it is a prerequisite for new opportunities for creating new jobs. However, it should be added that the data on the impact of digitalization on job creation is currently very controversial. Despite certain pessimistic forecasts regarding the limitation of reserves for creating new jobs, a decrease in employment and a rapid increase in unemployment in the world, the latest report of the International Labour Organization (hereinafter referred to as the ILO) records that in 2019 (to the COVID-19 pandemic) globally, there has been an increase in employment, although progress in reducing global unemployment has not been matched by corresponding improvements in job quality (Omarova & Kim, 2021).

According to the 2019 UN Digital Economy Report, the number of people employed in the ICT sector in the world has grown on average from 34 million in 2010 to 39 million in 2015, with the largest percentage of employees (38%) working in the field of computer services. During the same period, the share of the ICT sector in publicly available classes increased from 1.8% to 2%.

Achievement of target indicators at the EU level - up to 3% of employment in the ICT sector. For example, the number of industrial employment in Germany is growing with the current "Industry 4.0" policy announcements. Moreover, the growth in employment is taking place against the background of the fact that "Industry 4.0" over the 8-year period shows a negative growth in productivity, not a "small effect", but a negative effect. At the same time, employment is growing, and it grew even in 2019, when the decline in industrial production has become the most significant in recent years. That is, an increase in the number of employed (although insignificant) occurred even with a decrease in production.

So, according to preliminary estimates of the Federal Statistical Office of Germany (Federal Statistical Office, Destatis) in 2019, on average, about 45.3 million people worked per year. The number of employed in 2019 was 402 thousand or 0.9% higher than in 2018. In 2018, the corresponding increase was 1.4%. That is, there has been a constant increase in employment.

A detailed analysis of the French economy over the past 15 years also showed that an additional 1,200,000 jobs were created for the 500 thousand vacated due to digitalization of jobs.

The employment growth trend has also been observed in the United States over the past 10 years. The longest record-breaking period of continuous employment growth in the United States stopped only in March 2020, when the number of jobs in the US economy fell for the first time since 2010 for 710 thousand people. Many segments of the economy are practically stopped due to the COVID-19 pandemic, and unemployment in the country has risen to its highest values.

Digitalization is helping to reduce statistical discrimination. The new economic order contributes to the reproduction of equal opportunities for people regardless of their gender and age (Romanova & Zvereva, 2020). Digitalization provides wider access to information, remote work, educational programs, allows to reduce risks when starting your own business, to structure business in a new way.

Digital transformation is rapidly changing the current business environment, creating numerous opportunities to grow, improve business efficiency, reduce costs, improve customer service, and develop innovative business models. In the digital economy, growth depends on the pace of technology development, but such growth can only be provided by humans. An important step in the development process is the need to adapt updated business processes to the requirements of the digital economy (Frolov et al., 2020).

Digital technologies are transforming the operating model of an enterprise in the financial sector, that is, the way and how corporate strategy is applied in daily activities, as well as increasing the degree of investment efficiency and helping to identify unique previously unknown opportunities in the market. The fundamental goal of the personnel policy of any enterprise is seen in the achievement and observance in the future of the optimal combination of personnel processes occurring in the field of personnel formation, its quantitative and qualitative development in accordance with the goals and needs of the enterprise (Dubik & Pavlova, 2020).

Thus, the use of the achievements of digitalization and innovation is based on the close use of human resources and the formation of personnel policy. The complexity of its formation in this case is associated with the activation of innovative activities of employees. Focusing on the enterprise digitalization processes, it becomes necessary to take into account the competencies of employees in these processes at each level of work: from a specific employee to the work of the organization as a whole. Thus, it is necessary to motivate personnel to introduce new approaches to work in the activities of the organization.

Consider the algorithm for the formation of the personnel policy of the enterprise based on the criteria for motivating employees in the digital environment of the organization in order to form the personnel policy of the company in Figure 2.

The main factor motivating staff to work is salary. The structure of the salary of the company's personnel includes the following elements: base salary, bonus, variable component of the base salary, which has a directly stimulating function; payments that have a different focus and other components.

It should be emphasized that the effectiveness of the organization's personnel policy and employee motivation is influenced by many factors, and it is advisable to highlight digitalization as a priority. Based on the construction of regression equations, the factors that affect the motivation of employees can be selected. The following variables for analysis are used.

Y- salary of employees of the organization

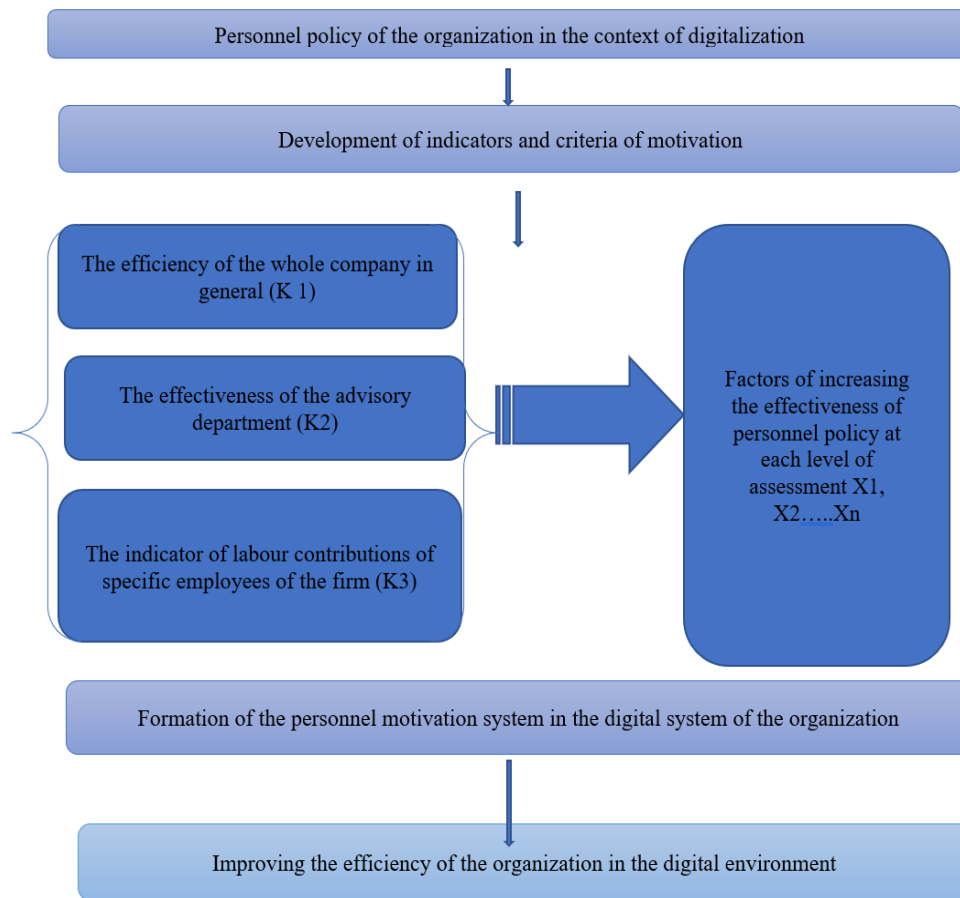


Figure 2. Personnel policy formation algorithm of the enterprise based on the factors of motivation of the organization in the digital environment

As independent, explanatory variables, the following were selected: performance of planned indicators for the production / provision of services / performance of types of work (X 1), losses from substandard production (X2) and others indicated in table 1.

Table 1. Matrix of pair correlation coefficients

	Y	X1	X2	X4	X1 4	X 15
Y- Salary of employees of the organization	1					
X 1. Fulfilment of planned performance indicators for the production / provision of services / performance of types of work	0.4 15	1				
X 2. Losses from substandard production	- 0.0 09	0.1 04	1			
X 3. Digitalization and implementing of new digital technologies	0.8 60	0.3 39	- 0.0 28	1		
X 4 Turnover of fixed assets	- 0.2 98	- 0.2 59	- 0.3 51	- 0.1 90	1	
X 5 The amount of non-production costs	- 0.0 58	- 0.2 89	- 0.3 78	- 0.0 23	0.5 49	1

In this case, an excerpt from the calculation is provided based on 48 observations with 5 explanatory variables. The analysis shows that the salary of employees of the organization has a close relationship with the implementation of planned performance indicators in terms of production volumes ($ryx_1 = 0,415$), with digitalization and the introduction of new technologies ($ryx_3=0,86$). Factors X2, X4 and X5 are characterized by a weak dependence of variables and are not recommended to be included in the model.

Similarly, the factors presented in table 2 of this study were identified. Consider the formation of the salary of the head of the personnel department based on the inclusion of factors identified during the correlation analysis, calculated according to formula 1.

$$Y = X * (1 + f(x_1 \dots x_n)) \quad (1)$$

where: X is the base salary,

$f(x_1 \dots x_n)$ – an indicator that takes into account bonus and variable payments and the use of digitalization achievements by employees can be taken into account in the salary premium and this indicator can be calculated using formula 2.

$$f(x_1 \dots x_n) = K_1 + K_2 + K_3 \quad (2)$$

where: K1 is a group of performance indicators for the entire company in general,

K2 is a group of performance indicators for the advisory department / structural unit,

K3 is a group of indicators of labor contributions of specific employees.

The value of the level, which reflects the work of the organization (K1), must be understood in accordance with the indicators that show the actual set of results of the organization's activities. This result should be assessed taking into account the existing production volumes of the company, sales volumes, services, cost levels of products and services sold by the organization, digitalization of the organization as a whole. The calculation of the K1 indicator is based on the sum of the scores for the presented factors, divided by their number, the scores are presented in Table 2.

Table 2. Assessment of factors for calculating the efficiency coefficient of the company as a whole K1

Factor	Evaluation criterion	Values, score
X 1. Implementation of planned performance indicators	Less than 60%	0
	60-90%	0.2
	90-100%	0.3
	More than 100%	0.5
X 2. Fulfilment of targets for profit and revenue	Less than 60%	0
	60-90%	0.2
	90-100%	0.3
	More than 100%	0.5
X 3. Organization costs	Excess costs by 3%	0
	Within the plan	0.1
	Reduction planned costs up to 3%	0.2
	Reduction costs over 3%	0.3
X 4. Digitalization and implementing of new digital technologies	Optimizing manual labor using	0
	NOT	
	Local networks of the organization	0.1
	Local dispatching systems	0.2
	Hardware and software systems	0.3

The limits of the K1 result are equal to 0.4 $((0.5 + 0.5 + 0.3 + 0.3)/4)$. The minimum value is zero. It can be noted that if the maximum performance in the organization of each of the above indicators is obtained, the amount of the basic salary of an employee of this organization will increase on a guaranteed basis by 0.4 and then it will amount to 1.4 of the figure of the salary established for the employee in this organization.

The value of the levels of the coefficient showing the effectiveness of any department (K2) and the coefficients of labour contributions of personnel (K3) are calculated similarly by forming tables containing factors, assessment criteria and the corresponding number of points.

Let us calculate the salaries of the heads of the HR department. In this case, you can ignore various additional payments. The wages earned are $1 + 0.4 + 0.42 + 0.52$. The final result is 2.34. Accordingly, in a situation with an employee performing an activity with a high return, the salary of the head of the personnel department should be 2.34 of the salary.

In a situation with the presence of a non-fulfilment of levels process, the salary of the chief can be no more than 1.23 of the salary. This can be called a significant motivational factor based on the work on the application of differentiated salary, depending on the presence / absence of the above indicators. Similarly, you can calculate the salaries of other employees in the organization.

7. Conclusion

As a result of the study, an algorithm was formulated for shaping the personnel policy of an enterprise based on the criteria for motivating an organization in a digital environment, taking into account factors affecting motivation at the level of the entire organization as a whole, the relevant department or a specific employee. The use of this algorithm will increase the motivation and competence of employees in the implementation of digitalization of activities and increase the efficiency of the company.

References

- Bazarova, T. Yu., & Eryomina, B. L. (2012). *Human Resource Management*, 96.
- Boxall, P. F., Purcell, J., & Wright, P. M. (Eds.). (2007). *The Oxford handbook of human resource management*. Oxford University Press on Demand.
- Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions. *Academy of management Journal*, 39(4), 802-835.
- Demchenko, M. V., & Simaeva, E. P. (2020). Harmonization of the legislation of the EAEU countries in the field of financial technologies in 2020. *Economy.Taxes. Law*, 13(1), 141-148.
- Dubik, E. A., & Pavlova, I. A. (2020). Development of the Nizhny Novgorod Region through the prism with the facets of investment, industry and education. *Financial Economy*, 6, 153-156.
- Dyer, L., & Reeves, T. (1995). Human resource strategies and firm performance: what do we know and where do we need to go? *The International Journal of Human Resource Management*, 6(3), 656–670.
- Frolov, V. G., Trofimov, O. V., & Klimova, E. Z. (2020). Development of a system model of the organizational and economic mechanism for the development of priority high-tech industries in accordance with the concept of Industry 4.0. *Russian Journal of Innovation Economics*, 10(1), 71-84.
- Kibanov, A. Ya., Mitrofanova, E. A., & Esaulova I. A. (2012). *Social and Labor Relations, Labor Market and Personnel Employment*, 98.

- Kuzmich, N. P., & Yakimovich, M. F. (2021). The impact of personnel policy on the efficiency of enterprises. *Economics and Business: Theory and Practice*, 1(1).
- Odegov, Yu. G., Kartashov, S. A., & Labadzhyan, M. G. (2017). *Personnel Policy and Personnel Planning*, 44.
- Omarova, A. T., & Kim, Yu. Yu. (2021). Foreign experience in organizing the personnel management process in the civil service system. *International Journal of the Humanities and Natural Sciences*, 1(2).
- Prizhennikova, A. N. (2020). Digital economy and labor relations. *The Modern Lawyer*, 1, 5-13.
- Romanova, T. F., & Zvereva, N.V. (2020). Effective public finance management in the digital economy. *Finansovye Issledovania*, 2(67), 45-54.
- Schuler, R. S., & Jackson, S. E. (1987). Linking competitive strategies with human resource management practices. *Academy of Management Executive*, 9(3), 207-219.
- Starodymova, A. V., & Samokhvalova, S. M. (2012). The relationship of HR strategy and HR policy of the organization. *Contemporary Problems of Aviation and Astronautics*, 8, 288.
- Tsapina, T. N., & Bezrukova, N. A. (2017). Personnel policy as an element of the personnel management system in an innovative organization. *Proceedings of the IVth All-Russian Science and Practical Conference on Actual Problems of Management*, 460-463.