

Improvement and Development of Human Resources of an Enterprise in the Context of the Digitalized Economy

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Abstract — In this article, we consider the features of the development of human resources at the industrial enterprises of the region from the perspective of a systematic approach. The purpose of the article is to determine the role of human capital as the basis for the digitalization of key enterprise processes. We propose an interpretation of the enterprise human resources development system in the context of digitalization as a combination of subsystems of general linear management, target, functional and support subsystems that complementary interact with information systems and computer capital. We show the directions of the transformation of the human resources development system in the context of digitalization. To define a list of favorable factors and barriers that influence the promotion of digitalization. We consider the main directions of human resource development at industrial enterprises of Voronezh region, propose the structure of a system for the development of human resources with the allocation of basic elements. We emphasize the concept of training in its development within the framework of the human resources development system.

Keywords — *development system, human resources, digitalization, concepts training, staffing, training, career management, competencies.*

I. INTRODUCTION

Modern conditions of the functioning of enterprises and organizations are determined by the increasingly aggressive influence of the external business environment – complexity, dynamism, and uncertainty. The rate of change is an important factor for managers of all levels and functional areas, including HR specialists. It is important to train staff and get new skills to develop and work in a changing business environment. Training programs aimed at building corporate competencies using group work. These methods still remain the preferred choice [1].

Reactivity becomes an important characteristic of the work of HR managers in terms of optimizing resources, analyzing the development of the future situation, compiling various scenarios, assessing possible risks, etc. In view of the above, changes affect all stages of work with human resources in the organization.

Changes in the concept of personnel selection are associated with the emergence of new positions in the organization, the possibility of using more sources, the development of new technologies for finding information about candidates and an accurate description of the content of the work. A competency-based approach remains preferable at all stages of working with staff. But there is a need for understanding, formation, and development of digital skills (competencies). The consideration of digital skills through the ability to use digital technology in order to perform work tasks is traditional method. However, in the context of the development of the digital economy, organizations still need specialists in various fields but possessing modern knowledge, skills that can actively apply new technologies in each area of the enterprise and ensure the effectiveness of the organization as a whole [2].

However, companies should not abandon a systematic approach, namely, the formation of a coherent effective system for the development of human resources. A modern and effective system for the development of human resources will contribute to the continuous professional and official growth of employees and will ensure the organization's transition to a new status – the status of self-learning and self-developing.

II. METHODOLOGY AND ANALYSIS

In the context of digitalization, the success of enterprises is to ensure the development of human resources. The development of human resources should be considered from the

perspective of a systematic set of measures that can ensure continuous improvement of managerial competencies and professional growth of employees to effectively achieve strategic goals.

The development subsystem within the framework of the human resources management system is one of the key functional subsystems and requires a more detailed study in the context of digitalization. The subsystem of the development of labor resources includes training, retraining and advanced training; the introduction and adaptation of new employees; assessment of candidates for a vacant position; periodic staff assessment; organization of rationalization and inventive activity; organization of work with personnel reserve; implementation of a business career and professional promotion. The elements listed above should function with the latest digital trends [3, 4].

L.I. Lukicheva fully characterizes the personnel development system with an emphasis on the context of digitalization, defining it as a targeted set of informational, educational, workplace-specific elements that contribute to the development of skills of employees following development goals and potential. Personnel development management is implemented in two main areas: training and career planning [5].

The modern transformation of the enterprise personnel development system is focused on digitalization processes, which means that the role of the leading link in the changes (in contrast to the traditional system) belongs to the complementary assets of computer capital. Human, organizational, and computer capital are most often seen as complementary assets of information systems.

Human capital is considered the basis of enterprise digitalization and the potential for training and retraining, communication. The culture of communication determines the success of the development of digitalization processes in enterprises. According to statistics, the staff who had been trained in the field of ICT technologies mainly refer to highly qualified specialists. According to the HSE, 79 % of software developers and analysts have high competencies in information technology (level of specialists, masters, candidates of technical sciences) [1]. In Russia, the relative proportion of ICT specialists in the total number of employees is 1.5 %. For comparison: USA – 4.1 %, UK – 5.1 %, Sweden – 6.3 %.

Thus, the system of development of human resources of an enterprise in the context of digitalization refers to the totality of subsystems of general linear management, targeted, functional and supporting subsystems that interact with information systems and computer capital, which contributes to the most effective achievement of enterprise goals through professional training and career management of organization employees.

III. DISCUSSION AND RESULTS

The analysis of the activities of industrial enterprises of Voronezh region identifies the existing problems of staffing support and development of human resources, such as:

- a deficit of highly qualified production personnel and engineering personnel providing design and

technological development and support of production processes at enterprises [4];

- inadequate staffing for research and development on the creation of qualitatively new types of industrial products, including the development of national and regional technological platforms;
- uneven distribution of labor resources over the territory of Voronezh region, for example, the redundancy of workers at city-forming enterprises, which largely determines the high differentiation of industrial companies in terms of the total wages of employees;
- lack of forecasting and personnel management mechanisms for certain industries and clusters in the modern labor market [9] and etc.
- The main areas of improving human resources and human development of industrial enterprises of Voronezh region should include [7]:
- ensuring a focus on the retraining and advanced training of personnel to meet the actualized needs of specific groups of employees of organizations engaged in technological, product and organizational innovations;
- transition to modular programs for retraining and advanced training of personnel for innovative production, focused on the development of competencies, developed for a specific category of workers, implementing the functions of technical, technological and organizational preparation of innovative production;
- putting into practice the state (regional) and municipal order for training employees of organizations implementing strategies for innovative updating of technologies and products, etc.

Figure 1 shows the proposed structure of the human resources development system of the industrial enterprise [4].

The target subsystems of the proposed system for the development of human resources of the organization include the implementation and achievement of the organization's goals, the implementation of organizational changes, the development of human resources potential, the acquisition and improvement of knowledge, skills, as well as the satisfaction of the needs of the organization's employees.

The subsystem of training and career management is the main functional subsystem in the framework of the general human resources development system. At the same time, the training subsystem is focused on the general concept of development, forms, and methods of training. The learning process consists of the following stages: identifying training needs, organizing training and determining the effectiveness of training.

The subjects of the enterprise human resources development system are the head of the organization, HR director (HR service, HR manager), head of the structural unit [5, 6].

Objects of the development system are employees of the organization [3]. The subject of development in the system is the competencies of employees, which are defined as a combination of knowledge, skills, and stereotypes of behavior. Supporting subsystems include subsystems of technical, regulatory, informational, legal and methodological support, which contribute to the implementation of training and career management processes for employees of the organization as part of the overall strategy and achievement of the organization's goals.

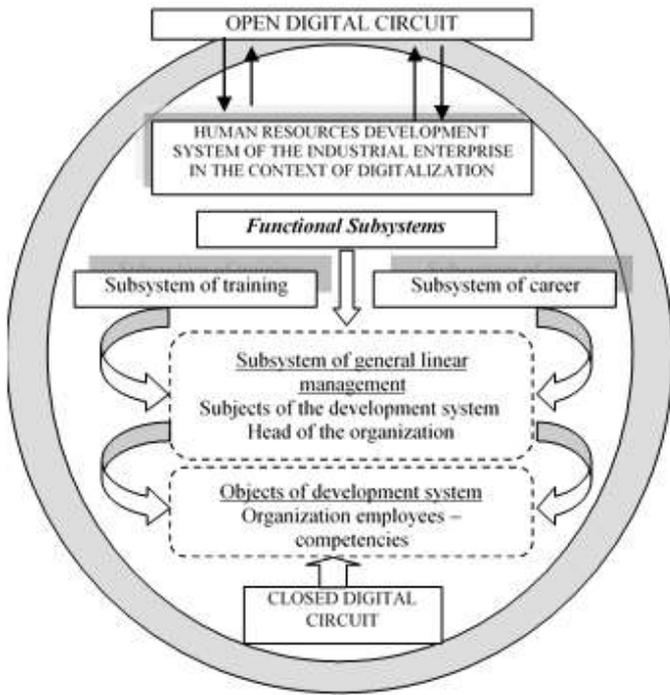


Fig. 1. The structure of the human resources development system of the enterprise in the context of digitalization

Research allows us to conclude that the subject of the development of human resources in the enterprise is the respective competencies of employees.

Competence is the personal ability of a specialist to solve a certain class of professional tasks.

At the same time, in the process of forming a system for developing human resources at industrial enterprises in the region, it is necessary to adhere to the corresponding concept of training (table 1) [4].

The following stages which are successively audited by the human resources management system at enterprises can be distinguished:

- 1) preparatory;
- 2) collection of information;
- 3) processing, analysis of information;
- 4) generalization and presentation of results.

The one more important aspect is the analysis of the effectiveness of the audit of the human resources management

system at the industrial enterprise from the perspective of the resources spent in the framework of this process and the expected improvements [7].

TABLE I. DEVELOPMENT OF CONCEPTS OF HUMAN RESOURCE TRAINING

Name of the training concept	Content of the training concept
Concept of the specialized training	It is focused on modern times and related to the corresponding workplace. A relatively short period is effective, but for the employee, it helps to preserve the workplace and also strengthens self-esteem.
Concept of the multidisciplinary training	It is effective from an economic point of view because it increases the intra- and non-production mobility of the employee; however, the employee attaches to the corresponding workplace
Personality oriented training concept	It aims to develop human qualities inherent in nature or acquired in practice
Concept of the training in the context of digitalization	The purpose is to identify the employee's potential using digital technology with its subsequent use and development within and/or outside the enterprise

Thus, the effectiveness of decisions based on the results of the audit of the human resources management system should affect all management aspects through the study of key management functions.

IV. CONCLUSION

In the content of the innovative economy, the introduction and effective functioning of the human resources development system at industrial enterprises of Voronezh region, which includes modern areas and the corresponding mechanism for professional training, retraining and advanced training of workers, are a prerequisite for achieving high results in industrial and economic activities.

In our opinion, companies should focus on favorable factors and existing barriers to develop human capital.

Some factors favor the improvement of personnel for enterprises conducting digitalization processes include the following:

- In Russia, the relative proportion of ICT specialists under 35 years. It is 64 % of the total number of ICT specialists. For comparison, the UK – 36 %, Sweden – 30 %, which allows predicting the successful transformation of the structure of ICT specialists in the future when leaving a convenient labor environment of older people;
- a large number of specialists of bachelors and masters trained in the specialty in the field of ICT (in Russia, about 4 % of all graduates of universities), which allows us to hope for the expanded use of the potential of young specialists in various sectors of the economy;
- a wide distribution of organizations involved in the production of software products, including those specializing in industrial technologies. Information systems (analytical, accounting and management) process and store a significant amount of data, while all major SAP systems are transferred to the "in-memory" SAP HANA platform. Protected electronic

document management is actively developing and staff work is being restructured taking into account IT trends.

- an ideological perception of the transition to digitalization by company management, as one of the relevant competitive advantages of modern business;
- specification of computer transformation of the enterprise as an increment of business assets;
- the loyalty of company personnel and external agents to the processes of development of complementary computer assets of the enterprise, which is partially due to the availability of convenient digital document management;
- prerequisites for structuring information.

Along with favorable factors, there are currently barriers that reduce the sustainability of the positive transformation of personnel in specific enterprise conditions. These might include:

- a relatively narrow range of integrated IT technologies used. Digitalization covers individual elements of production processes; in traditional technologies of commercial processes, there is almost no systematization between elements of computer technologies. In this regard, personnel engaged in computer technology has a narrow specialization, cannot overcome local barriers, which reduces work efficiency;
- underdevelopment of organizational capital in the practice of applying IT technologies. This is determined by the lack of mechanisms for the distribution and transfer of responsibility in the implementation of IT-technologies, the lack of information on the interaction of individual elements of a computer system;

- a high degree of dynamism of IT-technologies. It requires the organization of continuous processes for retraining personnel, improving their qualifications, which rests on a critical shortage of relevant retraining specialists.

The barriers create risks for the successful development of personnel in the context of digitalization.

One of the main tasks in managing personnel development is to radically accelerate digitalization processes, which is possible when conducting research and searching for forms of restructuring, improving personnel involved in the transition of the enterprise to digital technologies.

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