Modified approach for effective assessment of human resource management in the forest industry

I Zinovyeva*, S Kuznetsov and Yu Stepanova

Department of Economics and Finance, Voronezh State University of Forestry and Technologies named after G. F. Morozov, 8 Timiryazeva Street, 394087, Voronezh, Russian Federation

*E-mail: ecf@vglta.vrn.ru

Abstract. The existing management system in the forest industry complex is not adapted to modern trends and is not integrated into the new practice of human resource management, since even at the stage of personnel selection it is not focused on assessing the skill-set of applicants. The paper identifies the features and factors affecting the human resource management system, and substantiates a modified approach to assessing the effectiveness of human resource management (based on the study of the world experience of management practices). Modern-level indicators based on a person-centered approach have been also defined. The study proposes the incorporation of new architecture of indicators (emotional intelligence, level of transformation of roles in the team, employment of all the roles according to the Belbin model, the coincidence of the company's goal with the goals of employees, the level of employee skillset) as a part of the modified approach to assessing the effectiveness of human resource management that meets the new requirements. As a result, effective human resource management based on this approach will increase the competitiveness of the Russian forest industry at the international level.

1. Introduction

Today, the vector of economic systems' development is aimed at the development of innovation and digitalization, which has a significant impact on the choice of effective human resource management (HR management). In this regard, global changes are taking place in the Russian forest sector. As a result, raising the innovative level of the forest industry complex is a strategically important task for the country, the solution of which largely depends on the creation of effective human resource management system. To create such a system, first of all, a modified approach to assessing the effectiveness of HR management is required.

According to the Rosstat agency, the contribution of the forestry sector to Russia’s GDP (gross domestic product) is estimated at only about 1.2%. It indicates weak efficiency of the sector as a whole. Along with this, it has a powerful resource potential.

More than 20% of all forests on the planet are located in Russia. This is many times more than in the leading forestry countries of the world: USA, Canada, China, Sweden, and Finland. But due to the fact that the resource is used irrationally, the share of Russia in the world timber industry market is only 3%, and more than 50% of exports are low-valuable products: round timber and sawn timber. As for timber products with high added value, Russia is lagging behind here (its share in cellulose exports is only 4%) [1-4].
Many researchers in the field of HR management identify socially oriented problems (social responsibility, employee adaptation, environmental management, etc.) [5-8] as well as the problems of HR management digitalization [9,10]. However, the modern views of the authors are rarely aimed at studying non-standard indicators of the effectiveness of human resource management. Although some studies include indicators such as creativity, the coincidence of the goals of employees with the goals of the enterprise, etc. [11-14].

Despite the fact that today there are many approaches to human resource management, including algorithms, models and systems [15-19], the ideal model of HR-management has not been formed yet. Many theoretical and methodological aspects remain poorly studied and require significant development, which predetermines the relevance and practical significance of the problem and necessitates the creation of an effective toolkit for HR-management based on the existing world experience.

In particular, the existing system of HR-management in the forest industry complex has a number of problems, since it is not adapted to modern trends and is not integrated into the new practice of human resource management. Key problems arise even at the stage of personnel selection, which in forest industry, as a rule, is not based on a clearly formed model of competencies with their mandatory subsequent assessment and adjustment, in the form of personnel training, if it is necessary.

The forest industry complex is strategically important for the Russian economy, as it was evidenced by the Presidential Decree of May 7, 2018 No. 204 “On national goals and strategic objectives for the development of the Russian Federation for the period up to 2024”, the national project “Ecology”, the federal project “Conservation of Forests” [20-22]. In this regard, in order to increase the competitiveness of the Russian forest industry complex at the international level, based on the study of the world experience of HR practices, the authors set the purpose of the work of identify the features and factors that affect human resource management system and forming a modified approach to assessing the effectiveness of HR management that meets the new requirements. The approach will include new indicators of the modern level (emotional intelligence, the level of transformation of roles in the team, employment of all roles according to the Belbin model, the coincidence of the company's goals with the goals of employees, the level of the skillset of employees).

2. Methodology

The most significant problems in forestry complex management, based on the analysis of existing strategies and programs (“Main directions of development of the forest industry”, “Strategy for the development of the forestry complex for the period until 2020”, “State program” Development of forestry “for 2013-2020”, “Fundamentals of state policy in the field of use, protection, protection and reproduction of forests”, “The concept of intensive use and reproduction of forests”, “Strategy for the development of the forestry complex of the Russian Federation”, etc.) were identified at the initial research stage as follows: 1) lack of staff; 2) low technical level of personnel; 3) low wages; 4) low level of labor productivity; 5) social problems; 6) underdeveloped motivation systems [23-28].

Most of the problems are directly related to HR management. This proves the relevance of the development of effective HR-management in the forest industry. For effective human resource management, it is necessary to take into account the experience of the world economy leaders in Russia and the world. It is the study of a multitude of HR practices. This study enables to identify the subtleties of management that are necessary today. This subtleties lead to the effective work of forest industry enterprises. It is necessary to competently implement the correctly selected management standards of the world leaders of HR.

The world has accumulated enough experience in human resource management, but, despite this, there are many problems affecting effective HR management. These problems have been identified by the authors and presented in table 1.
Table 1. Problems of the HR-management system in the world.

| Country       | Problems of the HR-management system                                      |
|---------------|---------------------------------------------------------------------------|
| European Union| – Informal employment                                                       |
|               | – Youth unemployment                                                       |
|               | – The gap between the wages of men and women                                |
|               | – The gap between the wages of indigenous people and arriving migrants     |
|               | – Aging workforce                                                          |
| USA           | – Conservatism in the management system                                    |
|               | – Strict adherence to instructions, the volume of which is quite large     |
|               | – “Short-term profit”, but not “Stable income”, is a priority              |
|               | – Priority of single-discipline experts                                    |
|               | – Insufficient investment                                                  |
|               | – Decentralization of labor market                                         |
| Japan         | – Unemployment                                                             |
|               | – Low salary                                                               |
|               | – Lack of guarantees for the working population                            |
|               | – Low level of education                                                   |
| China         | – Lack of qualified personnel                                               |
|               | – Staff turnover                                                           |
|               | – Frequent violation of labor laws                                         |
|               | – Disadvantages of labor legislation                                       |
| Russia        | – Lack of a national HR management model                                   |
|               | – Many leaders do not have the necessary education                         |
|               | – System of kick-back schemes                                              |
|               | – Lack of intellectual resources                                            |
|               | – Multinationality                                                         |
|               | – Differences in territorial legislation                                    |
|               | – Low wages                                                                |

In addition to the above-mentioned problems, undoubtedly, the COVID-19 pandemic has had a significant impact on the economy of each country. This could not but affect the changes in the field of human resource management. Most enterprises were unprepared for such changes, and even some of the world’s largest brands were unable to maintain their positions and declared themselves to be bankrupts.

Analyzing the problems of the HR-management system directly in Russia, one can highlight the absence of a national model of human resource management. It affects most enterprises, in particular the forest industry. Another important problem is insufficient level of education of the leaders of some forestry enterprises.

Separately, we can single out the frequently encountered problem of motivating workers in forest industry enterprises. The situation was further aggravated by the pandemic, in which enterprises were idle and due to the high demand for couriers, many valuable personnel moved into this field of activity, leaving their jobs, receiving several times higher wages, which turned out to be a significant problem for the enterprises. The way out of this situation is to revise the system of moral and material incentives, but due to the crisis, this is often impossible task.

There are many factors affecting human resource management system in different countries of the world, which can be combined into cultural, economic, psychological, legislative and governmental and socio-epidemiological groups of factors. The internal content of these groups is presented in table 2.

Based on the factors affecting the governance system of the world countries, a number of features inherent in the leading countries of governance can be identified. The main models of management are
considered to be European, Western and Eastern one; despite this, each country has its own management characteristics. Many countries do not have their own model and use a mixed style, such as Russia. In table 3, we will consider the features of human resource management in England, USA, Japan and Russia as representatives of the main management models.

Table 2. Global factors affecting human resource management system.

| Group of factors       | Content                                      |
|------------------------|----------------------------------------------|
| Cultural               | – Personal view and attitude of a person to work |
|                        | – The relationship of people in a team        |
|                        | – Honesty and fairness of management          |
|                        | – National traditions                         |
| Economic               | – Wage level                                  |
|                        | – Material incentive systems                   |
|                        | – Unemployment rate                           |
|                        | – Economic growth rates                       |
|                        | – Competition level                           |
| Psychological          | – Motivation systems                          |
|                        | – Moral incentive systems                      |
|                        | – Working conditions                          |
|                        | – Availability of prospects                    |
|                        | – Guarantees and stability                     |
| Legislative            | – Laws in the field of HRM                    |
|                        | – Occupational Safety and Health              |
|                        | – Protection of workers’ rights                |
| Governmental           | – State support                               |
|                        | – Degree of government intervention in HRMS   |
|                        | – Development of trade unions                  |
|                        | – Participation of trade unions in HRMS       |
| Socio-epidemiological | – Opportunities for remote work                |
|                        | – Compliance with social security measures     |
|                        | – Public attitudes towards the pandemic        |

The human resource management system in each country has its own disadvantages and advantages, and today it is impossible to say which model is the most effective. Therefore it is necessary to give preference to a mixed system that will allow the enterprise to achieve high performance results and create the best working conditions.

Today, the global human resource management system is constantly being improved, although new approaches do not immediately give positive results, since in addition to using world experience, it is necessary to modernize the entire management system. At the same time, the intensive development of information technology in conjunction with COVID-19 is forcing all countries to use certain standards in the field of human resource management. Separately, we highlight one of the key features of human resource management – development of HR digitalization, which changes approaches, attitudes and management processes.

It is the experience of the leaders in digital transformation that makes it possible to single out the vectors of change in the field of human resource management at the enterprises of forest industry complex:

- Continuous search for innovations in HR-management. In connection with the prevailing VUCA-world (volatility, uncertainty, complexity, ambiguity), it is necessary to constantly look for new ways of effective management in order to withstand the competition.
• Openness to the introduction of new management technologies. Many timber industry enterprises still adhere to a conservative management policy, which significantly affects the bottom line.

• High level of employee motivation. It is motivation that is the engine of any enterprise today, but competently motivating employees is a task that is feasible only for enterprises with a properly built management system.

• Deep analytics, thanks to the ability to quickly process large amounts of data. Paperwork is receding into the background, and it is the digitalization of documentation that enables businesses to process more data.

• Implementation of digital technologies at all stages of management.

• Creation of modified approach to assessing the effectiveness of HR-management in the forest industry.

Table 3. Features of human resource management in different countries.

| Country    | Features                                                                 | Model          |
|------------|--------------------------------------------------------------------------|----------------|
| Great Britain | – Free migration of labor  
– Special attention to the contribution to the common cause  
– Respect for the personality of each employee  
– Sincere benevolence  
– Effective system of motivation and incentives  
– Guaranteed decent wages  
– Systematic professional development | European model |
| USA        | – Traditions of constant competition among employees  
– Encouraging individuality  
– Clear setting of goals and objectives  
– High profit payment  
– Variety of rewards  
– Special attention to the personal values of each applicant  
– Individual performance and responsibility  
– Orientation of management to an individual  
– A high proportion of informal relationships | Western model |
| Japan      | – Lifetime recruitment  
– Remuneration and promotion depends on the length of service  
– Almost all employees join trade unions  
– Collective responsibility  
– Development of the institute of "temporary workers"  
– Maximum diversification of production  
– Respect for elders  
– Politeness  
– Just-in-time method  
– Method “zero defects”  
– Team cohesion | Eastern model |

Today, there are many methodological approaches to assessing human resource management, presented by both Russian and foreign scientists, but for application specifically for forestry enterprises, it is important to highlight:

• Firstly, the peculiarities of the activity of the timber industry enterprise, which is the object of the study.
Secondly, methodological problems of evaluating the research object.

Thirdly, the focus of methods for assessing human resource management system, which can affect the entire system, and can be focused on particular elements of the system.

Fourthly, the key indicators of the methodology. It is important to have complete information on each of the studied indicators and one should not forget about the constantly developing world and periodically revise the methodology, using the experience of enterprises – leaders in the forestry industry.

In a modern economy, a constant assessment of the effectiveness of human resource management is necessary, which enables the enterprises to:

- Conduct timely diagnostics of the problems in human resource management system.
- Identify vectors of enterprise development.
- Make timely decisions related to the changes in the human resource management system.
- Make predictions on the impact of each studied indicator of the HRMS (human resource management system) methodology.
- To improve human resource management system of the enterprise.

Modern methods of assessing human resource management are based on the use of HR metrics that help measure the performance of a company. Existing methods include hundreds of HR metrics, depending on the direction of the enterprise, management models and many factors.

The result of applying a specific methodology should be to obtain both economic and social efficiency. Economic efficiency, determined by the ratio of results to costs, today must take into account not only the costs associated with the personnel of the enterprise, but also the costs of maintaining the HR service. Social efficiency, determined by the qualitative characteristics of working conditions, welfare of employees, should have a vector to reduce the labor intensity of performing personnel functions, gradually getting rid of duplicated functions.

The tools of the modern methodology for assessing the performance indicators of HR management should correspond to a clear vision of the goal, understanding of modern management trends and their constant research, readiness for changes, simplified systems thinking of management, understanding the importance of quickly adapting personnel to innovative changes. At the same time, the entire cycle of management activities, from the planning process to control, should be affected. To determine the significance of human resource management factors, their quantitative and qualitative assessment was carried out using the qualimetric analysis method based on average competent and qualified expert assessments.

Experts were specialists in the field of human resource management of leading furniture enterprises of the Voronezh region (Production company Angstrem LLC, Holding company Mebel Chernozemya LLC, Somovo-mebel LLC, Gefest-mebel LLC, Lux-Hall LLC, Office Furniture LLC, Grafskaya Kitchen LLC): director, deputy director, HR manager, HR-specialist, recruiter, HR-brand development manager, human resources specialist, personnel motivation specialist, personnel development specialist, personnel assessment specialist, HR-analyst. The total number of experts was 96. Questionnaires were developed in which experts consistently and in pairs compared macro- and micro-level indicators with each other in terms of their impact on the overall assessment of human resource management. One of the two indicators, which, according to the expert, was the most influential, was assigned a maximum score of 2 points, respectively, to the other indicator of the pair - 0 points. In the case when none of the two indicators of a pair was determined as the most significant or the expert found it difficult to assess them, both indicators were assigned a score of 1 point. Thus, indicators were formed for further research. The Felix-Riggs method was used as a toolkit for a comprehensive assessment of indicators.

3. Results and discussion
The modified approach to assessing the effectiveness of HR management in the forest industry complex (according to the methodology developed by the authors) includes three stages:
• Formation of a survey sample by questioning HR specialists to determine the significance of indicators for assessing the effectiveness of HR management.
• Formation of indicators for assessing the effectiveness of HR-management and reflection of their calculation technology.
• Formation of a comprehensive assessment of the effectiveness of HR management.

An analysis of the questionnaire survey of HR specialists to determine the significance of indicators for assessing the effectiveness of HR management at enterprises of the timber industry complex enabled to identify the most significant assessment indicators (table 4): OHRM (organizational management), THRM (technology management) and EHRM (educational management).

| Indicators | Assessment indicators |
|------------|-----------------------|
| OHRM       | O1 – High-quality staffing  
             | O2 – Personnel skillset level  
             | O3 – Staff retention rate  
             | O4 – Emotional Intelligence  
             | O5 – Level of alignment of personnel goals with business goals  
             | T1 – Job satisfaction  
             | T2 – Level of social tension and conflict  
             | T3 – Level of role transformation in the team  
             | T4 – Employment rates for all the roles (Belbin model)  
             | T5 – Personnel involvement in innovation  
| THRM       | E1 – Employee qualification improvement rate  
             | E2 – The number of innovative developments per employee  
             | E3 – The level of readiness of employees to innovate  
             | E4 – Number of employees with a scientific degree  
             | E5 – Employment rate of employees in R&D  
| EHRM       |                       |

The technologies for calculating the generated indicators for assessing the effectiveness of HR management are presented in table 5. Thus, this author’s methodology allows us to identify the weakest aspects of human resource management at an enterprise based on a comprehensive analysis of the most significant indicators.

The formation of a comprehensive assessment of HR management effectiveness was carried out using the classic Felix-Riggs method. The results of the comprehensive assessment over the past 3 years enables to identify the most problematic indicators of the effectiveness at enterprises X1-X5 (table 6).

The calculation of the HR management effectiveness showed that the objects under study (in order to increase the total efficiency index) need to strengthen their work with the most significant indicators, such as: Personnel skillset level (O2); Emotional Intelligence (O4); Level of transformation of roles in the team (T3); Personnel involvement in innovation (T5); Number of innovative developments per employee (E2); Employee readiness for innovation (E3). Agreeing with the opinion of a number of scientists, we emphasize that this circumstance is especially significant when taking into account individual, group and organizational factors to increase the effectiveness of teamwork within the framework of a social and creative approach. The results of many studies show that the growth of these indicators contributes to the solution of the problems related to the adaptation of employees [3], as well as to an increase in the effectiveness of strategic human resource management [7-9].
Table 5. Technologies for calculating indicators for assessing the effectiveness of HR management.

| Calculation technologies                                                                 |
|-------------------------------------------------------------------------------------------|
| O1 = number of jobs occupied by employees corresponding to qualifications/total jobs       |
| O2 = number of workers with a suitable skillset level/total number of workers (Adaptive testing of knowledge and skills) |
| O3 = number of employees left to work after 1 year/total number of employees               |
| O4 = number of employees with suitable EI/total number of employees (online EI estimate)   |
| O5 = the average score of match goals                                                     |
| Evaluated on a rank scale (1 – business goal fully corresponds to the employee's goal, 0.5 – partially corresponds, 0 – does not correspond) |
| T1 = average satisfaction ranks                                                           |
| Evaluated on a rank scale (1 – employee is completely satisfied with the work, 0.5 – partially satisfied, 0 – not satisfied) |
| T2 = average indicator of the ranks of social tension and conflict                         |
| Evaluated on a rank scale (1 – no conflicts, 0.5 – sometimes conflicts occur, 0 – conflicts often occur) |
| T3 = average transformation rate                                                           |
| Evaluated on a rank scale (1 – employee easily transforms into a new role, 0.5 – employee hardly transforms into a new role, 0 – employee can perform only one role) |
| T4 = number of roles available/9 (from 1 to 9 roles)                                       |
| (Belbin Command Role Model Test)                                                           |
| T5 = number of employees involved in innovation/total number of employees                  |
| E1 = number of employees who improved their qualifications in the reporting period/total number of employees |
| E2 = number of innovative developments/number of employees involved in innovation          |
| E3 = number of new innovators in the reporting period/number of new innovators in the previous period |
| E4 = number of employees with a scientific degree/total number of employees               |
| E5 = number of employees in R&D/total number of employees                                 |

Table 6. Summary table of HR management effectiveness.

| Enterprise | IHRi | O2  | O4  | T3  | T5  | E2  | E3  |
|------------|------|-----|-----|-----|-----|-----|-----|
| X1         | 313  | 0.50| 0.40| 0.55| 0.65| 0.30| 0.50|
| X2         | 234  | 0.6 | 0.3 | 0.4 | 0.55| 0.4 | 0.4 |
| X3         | 195  | 0.5 | 0.6 | 0.4 | 0.4 | 0.3 | 0.4 |
| X4         | 277  | 0.65| 0.55| 0.3 | 0.5 | 0.35| 0.4 |
| X5         | 542  | 0.8 | 0.6 | 0.6 | 0.8 | 0.9 | 0.9 |
| Goal       | 1000 | 1   | 1   | 1   | 1   | 1   | 1   |

4. Conclusion
A modified approach (formed by the authors) to assess the effectiveness of HR-management in the forest industry in modern conditions of global innovative development is based on the use of qualitative tools focused on the development of the emotional content of personnel. The proposed method for assessing the performance indicators of HR management, as an integral part of this approach, enables to shift the emphasis from standard assessment indicators to indicators of the modern level: transformation of roles in the team, employment of all the roles according to the Belbin
model, company’s goal should complement with the goals of employees, level of the skill set of employees, readiness of employees to innovate, the level of employee involvement in innovations. The endorsement of this approach at the enterprises of the forest industry complex made it possible to identify significant indicators, changing the values of which can increase the efficiency of HR management and competitiveness of the forest industry complex as a whole.

The proposed methodology of quantitative indicators of managerial impact factors on human resources of forestry enterprises, based on the author’s classification of these factors, differs from the existing ones by the division into micro- and macro levels, as well as by the use of non-standard evaluation indicators. Based on the analysis of global trends in human resource management, we can conclude about the universality of these indicators for the development of forestry industry in the world.

On the basis of the modified assessment indicators it becomes possible to conduct a comparative and retrospective assessment of the innovative characteristics of human resources of forestry enterprises, which is undoubtedly one of the key areas to ensure their competitiveness in the world market.

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