

Abdugapur K.
Ibragimov
Alexey A. Trishin
Anastasia A. Sozinova¹
Zhanna V.
Gornostaeva

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RESPONSIBLE HRM FOR RAISING THE QUALITY OF PRODUCTS: PERSPECTIVE OF OPERATIONS RESEARCH

Abstract: *This paper discusses the problems of improvement of product quality through the expansion of responsible management of human resources in the context of perspectives of operations research. According to this, we determined the essence and features of responsible HRM, outlined trends and factors defining the current state and development of this sphere, and characterised the directions and factors of the influence of SHRM on the quality of products within the quality management system. The goal of this paper was to substantiate further direction and prospects for the development of responsible HRM, based on operations research, which allows raising the quality of products and effectiveness of companies' activities.*

We also characterised the main methodological transformations that take place in the sphere of human resources management, identified spheres and operations that supplement human resources management within the application of the sustainable approach, offered a block scheme of the algorithm of analysis of a workplace based on SHRM, proposed the tools of integrating the elements of sustainability into this algorithm, characterised the direction for supplementing the corresponding algorithms with the elements of sustainability for each separate element of human resources management, and determined the promising directions for further research on the influence of sustainable HRM in an increase in product quality through the lens of operations research.

Keywords: *human resources management, responsible human resources management, quality of products, operations research, sustainable development, digital transformation.*

1. Introduction

In the conditions of domination of the consumer market, the quality of products is one of the factors in companies' success and

one of the factors in competitive struggle (Porter, 2008). Domination of the product offer over demand, which is peculiar to most current commodity markets, requires from manufacturers and sellers of products a special attention to quality. In turn, this

¹ Corresponding author: Anastasia A. Sozinova
Email: aa_sozinova@vyatsu.ru

requires the creation of the corresponding system of management, which would allow determining quality demands, organising and setting managerial and production processes, and supporting the proper level of quality or even raising it.

The focus on quality as one of the key factors of competitiveness in certain markets is the decisive strategic factor that subjects all other processes within the company. In such conditions, the comprehensive system of quality management unifies the production and managerial sub-systems of the company, which, in turn, requires the corresponding resources support. Labour resources in companies with processes that are subject to ensuring product quality play one of the decisive roles, for the human factor has the creativity and the highest ability to adapt. Material, financial, and technological factors are important in the conditions of a stable environment and well-organised stable processes. However, competitive struggle and constant growth of demands for product quality are closely connected with the changeability of the environment. Effective interaction with it is possible only if there are the appropriate labour resources.

Human resources management, in turn, is also subject to the constant influence of the changing market environment. In this context, globalisation, informatization, digitalisation, and expansion of the values of sustainable development simultaneously form new opportunities for an increase in the influence of employees on the quality of products and set increased demands on human resources management. In such conditions, together with the growth of the value of human factor in managerial systems, there grows the priority of human sustainability, which is manifested in the company's care for the health, well-being, and development of its employees and forms new perspectives in operations research and sustainable development of labour resources as a factor of product quality improvement.

The traditional approach to operations research in the sphere of labour resources was built around the striving toward an increase in the productiveness of employees by building the appropriate structure and development of managerial processes and systems that would allow receiving more effort from employees (Mahoutchian et al., 2023). This vision ensured a positive influence on the quality of products, but the cost of employee training and his value for the company grew. Together with this, the social and emotional burden on employees increases constantly. This requires additional care for the well-being, physical and emotional health of the employees, their development and self-fulfilment.

Assessment of the level of sustainable management of human resources, performed by Deloitte, shows the presence of many problems, which are connected primarily with the high level of exhaustion and stress among employees. Thus, half of the surveyed employees felt exhausted and experienced stress. 27-43 % of employees felt overload, irritation, loneliness, depression, or anger (Deloitte, 2023). Other surveys demonstrated the negative influence of work on the well-being of employees. This is expressed, in particular, in the fact that 80 % of employees face obstacles on the path to ensuring their well-being and comfort. Most of these obstacles are connected, directly or indirectly, with work (impossibility of using annual leave in full, limited time for fitness, good sleep, or friends and relatives) (Fisher, 2023). Such notions as burnout or “quit resignation” are also rather widespread.

According to this, implementation of the concept and dissemination of the practices of responsible HRM allows reducing turnover of personnel, achieving a higher level of satisfaction with work, and improving the level of interaction between employees. In aggregate, these actions form a good basis for raising product quality, but they require more detailed analysis from the position of operations research

2. Methodological basis of the research

The issue of sustainable development of labour resources to raise product quality from the position of the perspective of operations research does not have a stable methodological basis. Its provisions are in constant development according to the situation in the sphere of business, science, and social relations (Paunović et al. 2023). According to this, the problem of the quality of life of employees at work, which is studied within social science, psychology, group dynamics, and organisational behaviour, is well presented within human resources management based on sustainability (Varghese and Jayan, 2013). Thus, the studied problems form a complex interdisciplinary task, which requires a systemic consideration from the position of methodology of the theory of market, quality management, labour resources management, operations research, etc. Each research sphere has its features and focuses only on the designated group of problems. At that, the systemic approach allows agreeing on these approaches, and the process approach offers tools to determine the sequence of operations in the system of quality and personnel management.

Quality management in the global world, which is built on unified approaches and standards, requires a wider level of coverage of operations than just the support for product quality parameters. In the 21st century, this direction of management is supplemented with new visions, which had a secondary role in the period of the industrial-technological mode. At present, ensuring quality in business covers all spheres of the company's activities, including the creation of the proper work conditions and ensuring the well-being and high quality of employees (Suglobov et al., 2023).

On the whole, the research methodology of responsible management of human resources from the position of improvement of product

quality, which is achieved based on optimisation of operations, has a multi-level foundation, which requires determination of the key definitions and specification of the methodology of their consideration within the designated complex problem. In this context, quality management is closely connected with labour resources management, which acquires the features of responsibility and consideration of employees' interests. As for the perspective of operations research, the methodology focuses on dividing functions and processes into detailed operations and their optimisation. According to this, in the context of the research, we can improve product quality within each operation or group of operations. Such vision allows going beyond technological processes and significantly raises the potential of the tools to ensure quality.

The domination of approaches to human resources management based on sustainability is the result of a long evolution in the sphere of employment and the development of personnel. The main factors that were implemented over decades, starting from the mid-20th century, into the HR processes of companies include an increase in the level of education, active organisation and reorganisation processes of the company, improvement of the level of employment of females and their participation in management, and transformation of personnel management into the system of human resources management with the corresponding focus on skills, competencies, interests, and values of employees (Tot et al., 2022). One of the directions of the evolution of view is the focus not only on the observation of rights and ensuring the equality of employees at work but also on the creation of the proper quality of life (Varghese and Jayan, 2013).

Additional factors that determine the perspective are technological development, which basis is set in the sphere of Industry 4.0. Digital elements of the new industrial revolution interact with production and

economic mechanisms and substantially raise the flexibility of production and facilitate the better adaptability of products to consumers' needs, as well as an increase in product quality and labour efficiency (Tvaronaviciene and Burinskas, 2020). Given this, human resources management is subject to large transformations. At present, the understanding of work differs from the traditional one. It is less associated with the workplace and work time. The possibility of remote work and cloud technologies allow working from any place in the world. Dissemination of the practice of outsourcing and freelance and new methods of hiring outsourcers erases the limits of the notion of labour resources. In this case, human resources management cannot be considered as a separate internal function of management. It is integrated into a flexible system of management, in which traditional treatment of operations on personnel management is not actual, and models are not limited by the limits of the organisation (Deloitte, 2024).

As a result, operations research in the sphere of human resources management is characterised by a high level of uncertainty. Its main factors are unpredictable global events, quick technological progress that is based on artificial intelligence, evolution of the organisational culture and labour market, problems with psychological load onto employees, and care for their health and well-being (Deloitte, 2024).

3. Experimental setting and methods

The notion of quality as a totality of certain consumer parameters of products is a result of a complex sequence of operations, which are performed continuously and are aimed at standardisation of production and logistics processes, their setting and provision of the proper level of execution. This requires integration of processes of quality management into all sub-systems of management, including the following:

- Strategic management – which is manifested through the processes of determination of priority quality as one of the criteria of success and effectiveness of the company;
- Production – standardisation and optimisation of technological processes, quality control;
- Marketing – identification of the market's demands for quality, the use of quality as a factor in positioning the product in the market, and focus on quality as an element of the marketing strategy;
- Administration – development of norms and provisions of the policy and goals on quality at the company, standardisation and certification of processes on quality management; integration of the quality management system with the organisational structure of management;
- Finance – development of budget for quality and financial planning of quality support; monitoring and control over the effectiveness of events on quality management;
- Logistics – ensuring continuity of the process of quality management during the whole course of material flow, which covers supply, production, movement, storing, and sales of products; creation of the system of tracking the movement of the material flow;
- R&D – development of new or improvement of existing products given the corresponding demands to quality; supporting the state of constant improvement of product quality;
- Management of human resources – selection and training of personnel in quality demands; motivation for raising quality; monitoring and assessment of the effectiveness of employees from the position of quality, etc.

The general scheme of such integration is given in the form of a process that forms the system of quality management which is formed by different functional components (Figure 1). The scheme presents only the main functional components and sub-systems of management. Its direction is set through strategic management, but components and sub-systems do not reflect a strict sequence, for they are interconnected, creating a unified system. This system is open and subject to the influence of many factors, of which the most relevant ones are technological changes and an increase in the priority of social and environmental problems.

Within this system, the sub-system of human resources management is assigned one of the decisive roles. Effective work of this sub-system, aimed at ensuring creative, managerial, and operations activities,

requires the presence of the corresponding competencies with employees and their constant development. The main operations that are implemented by this sub-system, include planning, hiring, adaptation, motivation, assessment, and analysis of the effectiveness of using the potential. According to this, new demands are set before the system of quality management, which supplements technical regulations of quality with parameters of social responsibility and sustainability. As a result of the functioning of the system, quality management is synchronised with the cycles of strategic management and organisational life cycles and actively interacts with the external environment. This requires the complex integration of all elements of the business model of the company with the processes of quality management at all levels (Črv and Markič, 2022).

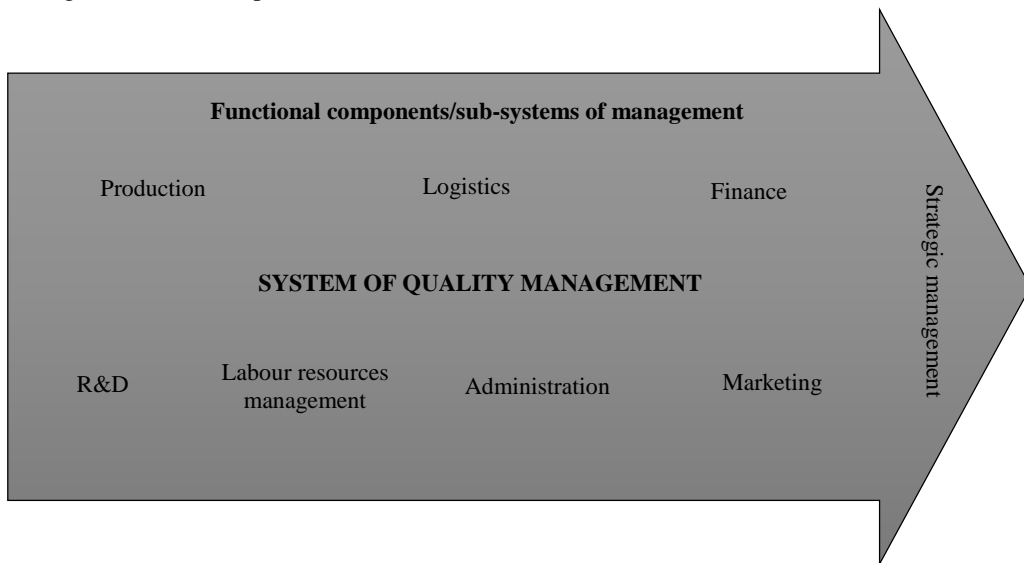


Figure 1. General scheme of integration of the functional components and sub-systems of management within the quality management system of the company
 Source: Created by the authors based on (Flynn et al., 2023; Torrington et al., 2020).

The methodological apparatus of this research is of the general scientific character and combines empirical and mathematical methods. The empirical methods include

analysis, synthesis, generalisation, and grouping. The mathematical methods are based on operations research. They involve a range of successive actions, which include

the following:

1. Determination of the role of human resources management in the quality management system;
2. Identification of HR processes and characteristics of their influence on the quality of products;
3. Supplementing the components of HRM with the elements of sustainability and their characteristics;
4. Development of heuristic algorithms and creation of block schemes for main HR processes given the elements of sustainability;
5. Characteristics and improvement of the models.

Operations research is one of the disciplines of applied mathematics, which is used for the development of optimization tasks and substantiation of managerial decisions. It uses a complex methodological basis, which includes the methods of modelling, forecasting, optimization model, statistical analysis of the game theory, etc. Among the methods of optimization modelling, heuristic algorithms are rather popular. They are simple to use and allow determining solutions that are close to optimal very quickly and with limited resources. Given the fact that optimization models in socioeconomic processes often lack correct data, heuristic models are often an optimal option for the development and substantiation of managerial decisions. Such tools are widely used in business analytics and offer efficient tools for the improvement of the effectiveness of operations and the value of results obtained, as well as the improvement of product quality (Conboy et al., 2020).

Absence of unified complex study on the given problems led to the expedience of the use of a wide theoretical basis, within which the issues of creation of an effective system of quality management are considered (Črv and Markič, 2022; Suglobov, 2023), human resources and human capital are studied (Deloitte, 2023; Deloitte, 2024), including in

the conditions of the development of digital economy (Flynn et al., 2023; Mahoutchian et al., 2023; Tvaronaviciene and Burinskas, 2020); standards of the quality of life are developed (Djordjević and Keković, 2023), care for work conditions of employees (Fisher, et al., 2023; Varghese & Jayan, 2013) and sustainable human resources management are studied (SHRM, 2022; Tot et al., 2022; Torrington, et al., 2020; Göç & Küskü, 2020; Bhaker, 2023; Herrera & de las Heras-Rosas, 2020); the influence of labour resources on the quality of products is analysed (Zamboni, et al., 2020; Swain, et al., 2018); the use of the methods of operations research in business (Conboy, et al., 2020) and human resources management are considered (Varadaraj & Ananth, 2018), etc.

The goal of this paper was to substantiate the directions and perspectives of the development of responsible HRM, which are based on operations research and allow raising the quality of products and effectiveness of companies' activities. To reach this goal, a range of scientific tasks was solved in this paper. It includes the determination of the essence and specifics of responsible HRM, disclosure of its connection with the system of quality management, characterisation of the elements of HRM and components of its sustainability, and formation of the algorithms of HRM elements.

4. Results

The role of labour resources is not of the key importance for stable and well-organised systems. In such systems, standardised processes and operations do not require constant direct interference from employees. A different situation is peculiar to dynamic and changing conditions. In this case, to react to events, the human factor is assigned the decisive role. It covers operations that are connected with critical analysis, making upprogrammed decisions, a manifestation of creativity, etc. In such a situation, the human

factor is a link between the information on new demands of the market and its perspective and real actions aimed at the transition to this perspective and achievement of real progress. Given the transformation of methodological approaches in the sphere of human resources

management through the implementation of the principles of sustainability and the influence of technological changes, the traditional perception of HRM and its elements is transformed and supplemented (Table 1).

Table 1. Transformation of the methodological provisions of the study of human resources in modern conditions

Element of HRM	Traditional perception of HRM	Prospective perception of SHRM
Employee	Staff hired employees, with an official work contract	An ecosystem that covers staff employees and other persons who are valuable to the company
Work	Set of functional tasks that are performed in the worktime	Set of functional tasks that are not limited by worktime and workspace
Corporate culture	A unified universal corporate culture that determines the rules of interaction between employees	The totality of the large number of microcultures that take into account a wide range of employees' interests
Involvement of the employee	Takes into account the level of employees' loyalty to the company, measures efforts employees are ready to make for the company	Takes into account the return received by the employee in exchange for efforts made for the company
Productiveness	Real comparison of work results and efforts made to obtain them	Comparison of work results with efforts made given the possibility of using labour resources in the long term

Source: Compiled by the authors based on (Flynn et al., 2023)

From the position of prospective treatment, which is implemented today, key elements that determine the specifics of labour resources management acquire new outlines. Thus, the traditional perception of employees as persons with the company has labour relations loses its actuality. Very often, employees are treated in the context of the ecosystem, which, apart from staff employees, takes into account groups of people in which the company may pose interest from the position of value. These may include graduates of educational establishments, potential employees, and representatives of the public and professional community with whom the company interacts.

The operations components are also subject to substantial transformation. Thus, work is not treated only as a set of functional tasks within the work time anymore. It takes into account the total efforts and other activities

of the ecosystem of employees that they make to solve production and other related tasks. Such efforts cover the processes of self-training, thinking about the problem, consultations via personal channels, etc. Similar differences are peculiar to corporate culture, which was perceived in the past as a unifying system, which offers universal rules and norms for the entire organisation. At present, corporate culture is often considered a totality of microculture that takes into account – in a better way – the needs and interests of employees are more flexible (Flynn et al., 2023).

From the position of involvement of employees, while in the past, the assessment of this indicator was unilateral (the level of involvement of employees in the organisation's activities was taken into account), this notion is now viewed from both sides, and the focus is made on what the employee receives in return to his

involvement. Transformation of the treatment of productiveness, in turn, also goes beyond the comparison of the result and effort made by employees and takes into account the long-term perspective of the employee's ability to perform his work over a long period.

The above changes penetrate the sphere of human resources management at all levels and cover all operations within each element, including the following:

1. Analysis of workplace;
2. Planning the need and characteristics of labour resources;
3. Selection and hiring of labour resources;
4. Development of human potential and training of employees;
5. Development and implementation of the policy of bonuses for work and effort;
6. Assessment of employees' productiveness;
7. Administration of labour relations (Torrington et al., 2020).

The list of the above elements and their sequence, as well as specific operations that are executed within each element, may differ for different sectors of the economy and

companies. The research of these operations involves distinguishing a certain sequence and algorithms of actions with the given criteria, which are based on the set order and characterise cooperation, which demands targeted efforts of the leaders, as well as the agreement of all processes of human resources management, including the processes of hiring, training, and adaptation, as well as the organisation of close interaction to solve current problems of ensuring product quality (Zamboni et al., 2020).

To ensure the functions of quality management, employees have to conform to a range of designated demands and criteria, which lie in the sphere of processes of human resources management and organisational behaviour. According to this, HRM directly forms quantitative and qualitative structures of labour resources, which requires the execution of the entire set of operations and procedures. In the conditions of implementation of the policy of sustainable human resources management, these elements are supplemented with additional demands, which form new factors and criteria (Table 2).

Table 2. Description of the elements of human resources management and their supplement according to the criteria of sustainability

Element of HRM	Description of the element of HRM	Supplement of the element according to SHRM
Analysis of workplace	Constant collection and accumulation of information about demands to specific positions, determination of the sets of competencies on the whole, for departments and positions	Taking into account the demands for ergonomics and labour safety, refusal from the use of discrimination provisions during the formation of demands to the position
Planning of human resources	Determination of the need for work and employees, analysis of the labour market, planning of the processes of hiring and firing of employees	Attention to the work-life balance, prevention of excessive burden
Set of human resources	Search and involvement of candidates who conform to the organisation's demands	Refusal from discrimination, ensuring the equal representation of different social groups
Selection of human resources	Processing candidates, conducting interviews and testing, making decisions on hiring the employee	Compliance with the principles of gender equality and inclusion, prevention of discrimination

Table 2. Description of the elements of human resources management and their supplement according to the criteria of sustainability (continued)

Element of HRM	Description of the element of HRM	Supplement of the element according to SHRM
Development of human resources	The continuous process of improving the quality of employees, growth and development of their potential	Promoting the values of sustainable development and ethical behaviour
Training personnel	Determination of the need for training, planning	Avoiding discrimination during the development and realisation of plans for employee training
The policy of remuneration for personnel	Set of rules and principles for stimulating employees to work	Using transparent KPI, fair assessment of work results, and remuneration according to the effort or value of the employee
Assessment of employees' productiveness	Collecting data on the personnel, formation of HR reports, analysis of productiveness, determination of the reserves of growth of effectiveness	Observing the terms of anonymity, considering the views of employees on the optimisation of work and the system of human resources management
Administration of labour relations	Compliance with labour law, proper registration of labour relations	Compliance with ethical norms, transparent communication with personnel, ensuring confidentiality of personal data

Source: Formed by the authors based on (Bhaker, 2023)

According to the above, operations with human resources management are supplemented with additional demands and criteria, which, on the one hand, complicate the process of management, and, on the other hand, set conditions for its long-term sustainable development. Analyses of the workplace, according to production tasks, include operations aimed at providing the company with labour resources with the designated set of competencies. In the conditions of SHRM, execution of these operations involves additional consideration of new demands, some of which are aimed at improvement of labour conditions (ergonomics and labour safety), and some – at the observation of the criteria of sustainable development (refusal from discrimination, etc.). In totality, both groups of demands create additional value for

employees.

Implementing additional demands and criteria in the system of human resources management creates new conditions within operations research, which can be reflected accordingly in algorithms (Figure 2). To build the algorithm, the following input data are used: *J* – list of workplaces; *R_j* – demands for workplace *j*; *E_j* – current results of analysis of workplace *j*; *C_j* – cost of the full analysis of workplace *j*; *I_j* – criteria of inclusion for workplace *j*; *G_j* – criteria of ergonomics for workplace *j*; *D_j* – criteria of discrimination conditions for workplace *j*; *B* – budget of analysis of workplaces. Among them, *I_j*, *G_j* and *D_j* (in italics) are criteria that characterise conditions of sustainable development of labour resources and may not be used in traditional HRM.

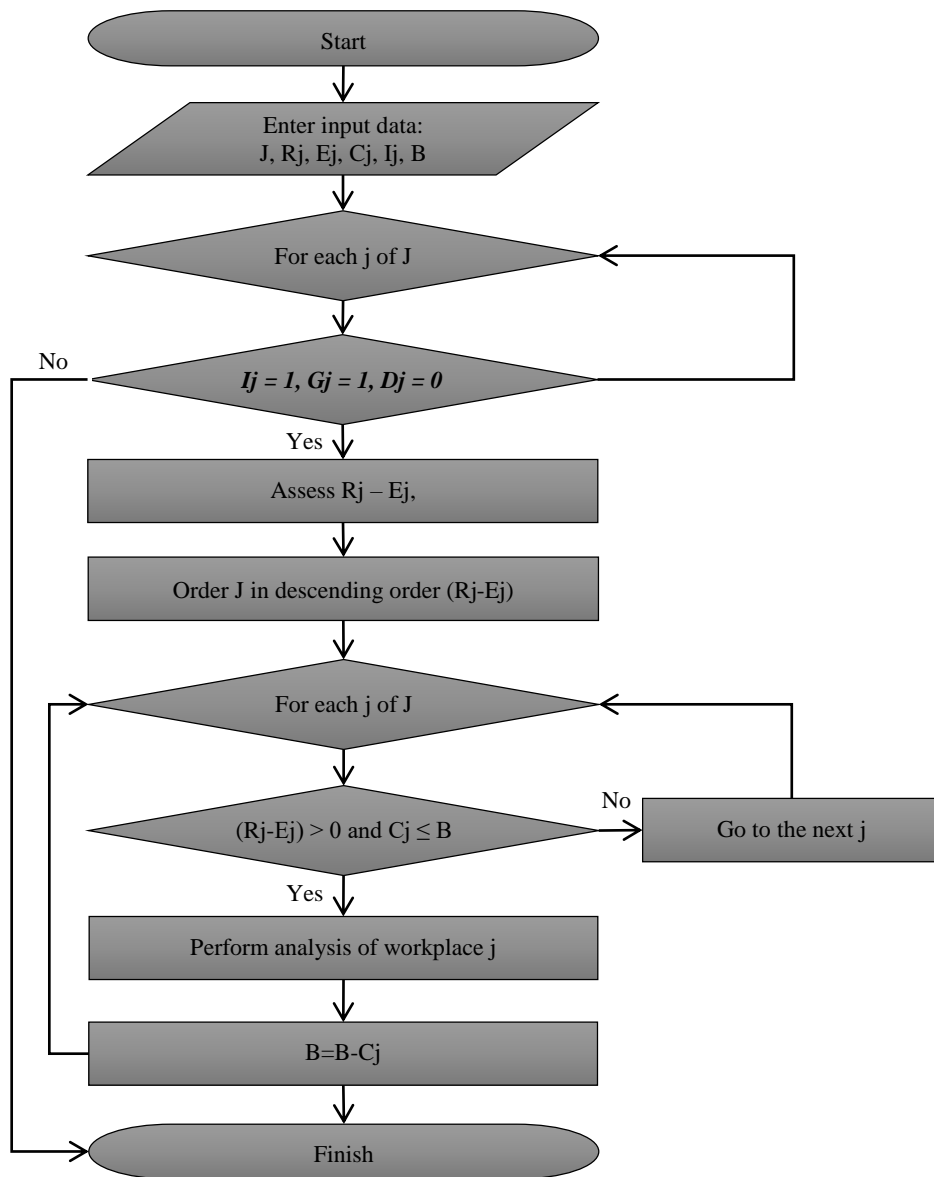


Figure 2. Block scheme of the algorithm of workplace analysis according to the principles of responsible HRM
Source: Authors

According to the algorithm, each workplace (j) is primarily assessed whether it complied with the terms of sustainability, which is characterised by the necessity of conforming to the criterion of inclusion ($I_j = 1$); criterion

of ergonomics ($G_j = 1$) and criterion of absence of discrimination conditions ($D_j = 0$). Failure to meet these conditions ends the algorithm and leads to a reconsideration of demands in the workplace. Correspondence

to all three criteria allows for the transition to the operation of comparison of demands to the workplace to the results of previous analysis of the workplace. After the assessment $R_j - E_j$, results are ordered in descending order, and their assessment according to the criteria $(R_j - E_j) > 0$ and $C_j \leq B$ is performed. At that, the size of the budget is constantly corrected ($B = B - C_j$). Thus, an assessment of the expedience of workplace analysis is performed until demands for the position exceed the results of the previous analysis, and the budget is sufficient for such analysis. If any of these conditions is not met, the algorithm ends.

A similar algorithm can be built for all other elements of HRM. Thus, for responsible planning of human resources, the division of tasks must start with persons with a lower load. Apart from this, the maximum number of hours can be limited by the manager's order or the employee's desire.

Development of a responsible algorithm of development and training and personnel involves additional division of employees who belong to vulnerable groups into certain categories. If the parameters of the training programme conform to the group's demands, all its participants are accepted in the programme within the planned budget. An additional element of such an algorithm could be the adoption of the mandatory criterion of the educational programme's correspondence to the demands of inclusion and the absence of signs of discrimination.

For algorithms of the responsible policy of remuneration and assessment of employees' productiveness, criteria of sustainability can be realised through the employee's contribution to the final result and his role in the team, as well as evaluation of employee's activities given their suggestions as to work optimisation. During the preparation of an algorithm for responsible administration of labour relations, an important criterion could be the depersonalization of data about employees through assigning a unique identifier, as well as the creation of a

constant channel of communication for feedback from employees.

Thus, the perspectives of operations research of human resources responsible management contain many options to raise the value of work for employees according to an increase in the criteria of sustainability of labour relations and adaptation to the conditions of digital transfer. Detailed development of algorithms and operations, based on the criteria of sustainable human resources management, allows, through the impact on direct execution of functions on personnel management, setting preconditions for strategic achievement of goals on product quality improvement. However, in the conditions of dynamic changes, such actions and measures require the integration of all processes to ensure product quality within one system, which works effectively and uses the potential of each separate element, including human resources management.

5. Discussion

The performed research is one of the intermediary stages within the complex study of the problem of product quality improvement through implementing the concept of sustainable human resources management, which is considered through the lens of operations research perspectives. Results obtained can be used at different levels of management within automatization or systematization of the processes of human resources management. At that, the presented example of the algorithm can be scaled to all stages and elements of HRM and supplemented according to the demands of each specific department or even job.

According to this, the proposed tools of management allow determining the key parameters of sustainable human resources management and generalising empirical conditions of the influence of labour resources on the quality of products. However, the given conclusions and generalisations require further research, aimed at additional calculations and

substantiation of results obtained. First, more attention should be paid to the algorithm of the influence of sustainable human resources management on an increase in product quality within the quality management system. Detailed development of such mechanism and theoretical substantiation of the principles of its work will allow creating an opportunity for modelling and forecasting future events in the studied sphere.

It is also necessary to study the problem of determining the balance between the economic goals of the company and the influence of the elements of sustainable development of labour resources on its general effectiveness. In this context, the factors in sustainable development and improvement of labour conditions should not aggravate the economic state of the economic subject in the long term. However, for many companies, the calculation of forecast indicators of such influence could be connected with the absence of the necessary information basis for calculations or the insufficient level of substantiation of the assessment methodology. Therefore, this direction requires a complex approach to the specification of the research methodology, determination of the methodological tools, and conduct of the corresponding research operations to find the optimal means of combining the elements of sustainable development of labour resources and economic effectiveness.

6. Conclusions

Human resources management in the system of quality support plays one of the key roles because it allows solving the most complex tasks in the conditions of a changeable external environment, especially in case of the necessity of making decisions in non-typical conditions, which are connected with different limitations. The current state of human resources management is connected with the change in methodological conditions, according to which understanding of work, workplace, and

worktime changes, their limits are erased and acquire a new role according to digital transformations and expansion of the ideas of sustainability of labour relations.

According to the above, all stages and elements of human resources management could be supplemented with the elements of sustainability, which involve consideration of demands to ergonomics and safety of employee work, refusal from discrimination provisions during the formation of demands to the positions, observation of work-life balance, prevention of excessive workload, ensuring equality of the representatives of vulnerable and other social groups of the population, ensuring the conditions of inclusion, promotion of the values of ethical behaviour and sustainable development, transparency and fairness of assessment of the results of activities and motivation of employees, compliance with the conditions of anonymity and confidentiality of employees' personal data, and creation of transparent communication with personnel.

Implementation of sustainable development components in human resources management has a large potential to raise the value of work for employees and positively influence the quality of the company's products. Conditions of the use of such components within each element and stage of HRM could be viewed with the help of heuristic algorithms. Heuristic models offer approximate solutions for complex optimisation tasks, which are characterised by a rather high level of suitability for practical use. They allow integrating operations on compliance with sustainability demands in the processes of analysis of the workplace, selection and hiring of employees, their training and adaptation, motivation, assessment, and administration of labour relations.

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Abdugapur K. Ibragimov
Banking and Finance Academy
of the Republic of Uzbekistan,
Tashkent, Uzbekistan
gafuribragimov@mail.ru
ORCID 0009-0000-9032-0654

Alexey A. Trishin
Plekhanov Russian University
of Economics, Moscow, Russia
Trishin76@gmail.com
ORCID 0009-0002-2338-7802

Anastasia A. Sozinova
Vyatka state university, Kirov,
Russia
aa_sozinova@vyatsu.ru
ORCID 0000-0001-5876-2823

Zhanna V. Gornostaeva
Institute of Service and
Entrepreneurship (branch) of
the Don State Technical
University, Shakhty, Russia
zh.gornostaeva@mail.ru
ORCID 0000-0002-2435-5389
