



Cost-Effectiveness of Rationalization and Certification of Working Places in Cattle Breeding

Leonid Kovalev

Belarusian State Agrarian Technical University

Igor Kovalev

The Institute of System Research in Agroindustrial Complex of NAS of Belarus

Abstract. This article touched upon the undertaking work on streamlining and certification of working places, which is an important means to improve the efficiency of the agricultural enterprise. The article discusses some ways of their cope to the certification and rationalization of employment service enterprises agrarian industrial complex of the Republic of Belarus. In the article the economic feasibility of the work in the enterprise to improve the organization of labor, which provides significant savings reserves, primarily save time and labor in agriculture.

Keywords: certification of the workplace, the rationalization of the workplace, technical service, maintenance and repair.

The main purpose of certification and rationalization of jobs produced in enterprises maintenance in agriculture - is to increase the efficiency of the repair of production, improve the quality of maintenance and repair of equipment and livestock production and management of human resources by: acceleration of productivity growth by bringing jobs to the requirements of scientific and technological progress, as well as reduction of manual and heavy physical labor;

improving the use of active fixed assets by eliminating unnecessary jobs, technical re-equipment of workplaces which use obsolete equipment, tools, machinery, to ensure a balance of jobs and workers and improve the coefficient of the shift index;

improve working conditions and safe production in each of jobs, improve the culture of maintenance of production;

increase of social activity and qualifications of employees, their involvement in the management, including the assessment of the level of technical service and to identify measures to improve it.

The main objectives of evaluation, rationalization and accounting jobs are:

determination of actual technical, organizational characteristics of jobs and comprehensive assessment of their compliance with the requirements of advanced solutions and regulatory and technical documentation;

identify jobs that do not meet regulatory requirements or progressive solutions in engineering, technology, organization, environment and safety;

development of organizational, technical measures to streamline or eliminate inefficient jobs, morally and physically obsolete machines through better use of the most productive, combining professions, accommodations devices and productivity tools, mechanization, etc.

Work on the job evaluation preceded by an analysis of the applied technological processes, production, labor and management in general, the repair service to identify innovative, best ways to improve the regulatory framework, development and approval of the management organization and technological rules for the implementation of the main types of work, the definition of a list of essential types of work performed on individual jobs.

Accounting jobs is the first phase of work on their certification and provides a definition of jobs, their classification and grouping by type and character of use, categories of workers employed therein.

Certification of workplaces is a set of activities, including a comprehensive assessment of each job on its compliance with the advanced scientific technical

and organizational level, providing increased productivity and high quality equipment repair.

Rationalization of jobs is a set of organizational and technical measures aimed at improving the existing jobs, improving their use, improved maintenance and productivity, working conditions and quality of repair equipment.

Scheduling jobs is a calculation of the optimal number and structure of employment in order to ensure balance in their labor force employed in the repair and service enterprises livestock.

Organization of work on the integration, validation, and streamlining the administration of the job of repair and maintenance of the enterprise together with trade union committees with broad involvement of staff and workers, inventors and innovators, workers labor protection and safety.

Frequency and time-bound job evaluation established by the Ministry of Agriculture and Food of the Republic of Belarus at least once every five years.

Workplace - the workspace, equipped with the necessary means for the work activity of the employee or group of employees that perform production tasks. In order to ensure the completeness, accuracy and comparability of the results taking into account the following basic classification features jobs:

by category of workers - the jobs of workers, employees;

number of employees - both individual and collective;

the degree of mobility - stationary and mobile.

Under the collective means a workplace, which employs several employees that perform one or more related processes in time for the maintenance and repair of machinery and equipment.

Stationary jobs - it jobs that do not change their position in space (fitters, welder, etc.). Mobile jobs - are places that change their position in space as you complete maintenance and repair of machinery and equipment directly on livestock farms and complexes (plumbers, electricians, gas welders, etc.).

Certification Commission sets corresponding to the name of occupations and positions of employees, according to the Classification of the Republic of Belarus

"Professions employees," approved by the Ministry of Labor and Social Protection of the Republic of Belarus of 22 October 2009 № 125, also sets the characteristics of works on Single classifier works and trades workers approved by the Ministry of Labor and Social protection of the Republic of Belarus on March 30, 2004 № 34 and on the Common Classification of posts employees, approved by the Ministry of Labor and Social protection of the Republic of Belarus of 30 March 2004 № 32, as well as compliance with the general classification of economic activities in the Republic of Belarus .

Planned number of individual jobs is calculated based on the regulatory complexity by type of work and facilities or number of regulations.

All jobs are counted, regardless of whether they are used in one, two or more shifts. For jobs that are not used during the plan period, indicate the average value for the year of its operation.

Labor Organization - a system of measures to ensure the rational use of the labor force, which includes the right balance of people in the process of production, exchange and cooperation, methods of regulation and incentives, workplace organization, maintenance, and necessary conditions.

Workplace organization - a system of measures to equip the workplace machinery, equipment, spare parts, technological and organizational accessories and their location in a particular order.

Workplace organization - providing it with the necessary for a comfortable and efficient execution workflows machines, instruments, technology, and organizational affiliation.

Disposition of the workplace - this is a rational distribution of production areas, workers, materials, process, and organizational supplies and equipment necessary to perform the work process.

technological packages - these are technical means to equip the job of the number, qualification and professional staff to perform work on an approved technology and standards of performance.

The collective and individual workstations for each facility, business unit, repair

service facility is in accordance with the standard documentation. Based on the material organization of the primary account annually to the statistical reports on jobs, the results of their assessment and rationalization on forms approved by the decision of the National Statistics Committee of Belarus.

CERTIFICATION WORKPLACES

Certification of workplaces - comprehensive assessment of the workplace in accordance with regulatory requirements, innovative solutions and advanced scientific technologies to improve productivity and the quality of maintenance and repair of machinery and equipment on farms.

When determining whether a workplace uses state standards, sanitary regulations, standards process documentation, project of works, standard documents, a description of the organization of work, description of work processes, standards of enterprises, sets technology.

Certification of workplaces by the following levels:

technological;

organizational;

working conditions and safety.

Productivity and quality of the maintenance and repair of machinery and equipment of livestock farms are calculated to assess the efficiency of the workplace.

Assessment of the technical level of the working places is taken of the following factors (Kt)

performance of the equipment (Kt₁)

requirements for the quality of work for the equipment (operations) (Kt₂)

advanced processes and the use of technological capabilities of the hardware (Kt₃);

technological equipment data sets mechanization, equipment, fixtures, equipment, motorized, manual and measuring instrument (Kt₄);

availability of mobile equipment (Kt_5).

In assessing the performance of the equipment is taken into account:

match the actual performance data of the equipment , or this would not be taken into account in connection with the production and technological need of this type of equipment (Kt_1).

In assessing the suitability of equipment requirements for the quality of work (operations), take into account:

opportunity to provide passport the actual condition of the equipment requirements for the quality you performs maintenance and repair of livestock equipment.

In assessing advanced processes and the use of hardware features taken into account:

line equipment operation modes regime provided for in process documentation.

In assessing the level of technological equipment of the workplace accounted for the presence in the workplace throughout the tooling provided for the process.

In assessing the level of availability of lifting and mobile equipment accounted availability and completeness of lifting and mobile equipment.

Assessment of the workplace in the technical level is determined by the following formula:

$$Kt = \frac{Kt_1 + Kt_2 + Kt_3 + Kt_4 + Kt_5}{5} \quad (1)$$

In assessing the organizational level job included the following key indicators (Ko):

proper design job with regulatory and technical documentation (Ko_1)

organizational workplace equipment and the availability of related services, regulatory and technical documentation (flow charts, maps, work organization, etc.), work plans brigade outfits (Ko_2);

use of advanced forms of work organization in the workplace: the use of the

brigade form of organization and motivation, rationality service job (Ko_3)
 compliance costs progressive labor standards regulations (Ko_4);
 utilization of workplace (Ko_5).

In assessing the rationality of planning workplace considered proper design workplace standard project work organization.

In assessing the workplace for all equipment provided for a typical project organization of labor, and its technical condition.

In assessing the use of advanced forms of work are taken into account:

application forms Brigade Labour Organization and its rationality (whether brigade complex, cross-cutting, running on a single outfit, distributed a total earnings at a rate of labor force participation, etc.) ($Ko_{3.1}$) combining trades ($Ko_{3.2}$):

$$Ko_3 = \frac{Ko_{3.1} + Ko_{3.2}}{2} \quad (2)$$

Similarly defined, and other items index as arithmetic mean, where evaluation is performed on two or more criteria.

In assessing compliance with the norms of labor costs progressive standards take into account:

presence in the workplace norms of time and that their model rules;
 match the actual output quotas calculated (design).

In assessing the use of the workplace accounted for hardware utilization and employment in the workplace during the shift.

Assessment of the workplace is defined by organizational level by the formula:

$$Ko = \frac{Ko_1 + Ko_2 + Ko_3 + Ko_4 + Ko_5}{5} \quad (3)$$

When assessing conditions and safety in the workplace accounted for the following key indicators (Ky):

line of household and hygiene regulations (Ky₁);

use of heavy physical labor (Ky₂);

security and compliance with safety standards of individual and collective protection (Ky₃);

providing workers with special clothes and special shoes in accordance with established standards (Ky₄).

In assessing compliance with sanitation and hygiene regulations are taken into account:

appropriate concentrations of hazardous substances in workplace air regulations;

appropriate temperature and relative humidity with regulatory requirements;

compliance performance parameters of lighting in the workplace regulations.

In assessing compliance with the use of heavy physical labor is taken into account compliance with the conditions of exercise equal to or below acceptable standards.

In assessing the security and compliance of safety standards of individual and collective means of protection are considered:

presence in the workplace, relief funds, signaling danger;

personal protective equipment;

electrical safety, fire and explosion, depending on the specifics of equipment and conditions of use.

In assessing the state of security of workers clothing and special footwear in accordance with established standards taken into account:

the quantity and range of clothing and footwear to the established norms.

Assessment of the workplace in terms of working conditions and safety is given by:

$$K_y = \frac{K_{y_1} + K_{y_2} + K_{y_3} + K_{y_4}}{4} \quad (4)$$

Assessment of the workplace on the technical, organizational level and the level of working conditions and safety characterize the actual state of the workplace (K_{total}) and is defined as the arithmetic average of three factors as follows:

$$K_{total} = \frac{K_t + K_o + K_y}{3} \quad (5)$$

According to the results of certification each job falls into one of three groups:

certified - jobs, results of which fully meet the requirements in their evaluation or above;

be rationalization - jobs, some indicators that do not meet the requirements, but they can be brought into line with these requirements in the rationalization process;

subject to liquidation - jobs, figures which do not meet the requirements and can not be brought down to their level as a result of rationalization.

The workplace is considered qualified if his overall assessment is not lower than the value of 0.75, and the number of indicators that do not meet the regulatory requirements for each level does not exceed unity.

For each non-Qualified workplace conducted a feasibility analysis of a job with the development of solutions to reduce, rationalize, continued operation of the workplace, and identifying trends, assess the feasibility and timing of rationalization.

Workplace with the value of (K_{total}) equal to 0.5-0.75, be rationalized.

If a job with the value of (K_{total}) is less than 0.5, it is not qualified and subject to liquidation. It is necessary to transfer certain operations (work) to one of the certified job.

The results of job evaluation and suggestions for streamlining the map are reflected in the certification, signed by the members of the Commission, certifies, and the workers employed in these studies.

RATIONALIZATION WORKPLACES

Rationalization of jobs is a complex of organizational and technical measures to improve employment and improving their use.

Upon completion of job evaluation in the organization conducted a feasibility study, in which:

The results of job evaluation and suggestions for improvement;
calculated the effect of bringing jobs to the standard level and the necessary costs;
identifies technical, material and financial resources for the rationalization of jobs.

After the analysis is determined by:

main trends of the maintenance and repair of livestock equipment, the volume and timing of the implementation of measures to rationalize the number of unnecessary jobs and terms of liquidation, the number of jobs to be rationalization, the number of workers that require advanced training, as well as exempt employees and their possible further use.

Measures to streamline the jobs are being developed under the leadership of Chief Engineer District Agricultural Service.

Responsibility for the development of a plan of organizational and technical measures rests with the Chief Engineer District Agricultural Service. Plan is developed based on analysis of assessment results and proposals of the workers, engineers and public organizations and approved by the director of the Regional Agricultural Service.

Term development and approval of the action plan - two months after the job evaluation. Changes in the plan of organizational and technical measures are

included in the prescribed manner. The event will be executed only after the act of its implementation.

A summary of the survey results, evaluation and rationalization of jobs in the established order is sent by a higher organization.

Cost-effectiveness of individual activities, depending on their contents are made as follows:

for events to raise the technical level - according to the method of determination of economic efficiency in the economy of the new technology, inventions and innovations (basic provisions), subject to additions and clarifications contained in industry standard 102.18-2011 "Methods for the economic evaluation and procedure definition of indicators ", approved by the Ministry of Agriculture and food of the Republic of Belarus of 17.11.2008 № 524;

When prishodit elimination of jobs, the economic effect is determined by taking into account the residual value of the equipment. When freed from the equipment operations are transferred to the more advanced equipment, calculated additive effect derived from the reduction of production costs, as the introduction of new equipment.

When replacing jobs in new effect is determined as well as on measures to improve the technical level, taking into account the residual value of the equipment released.

PLANNING WORKPLACES

The main tasks of planning jobs at service stations are consistent optimization of the number of jobs, the achievement and ongoing maintenance of balance of jobs and workers maintenance and repair of machines and equipment in animal husbandry. Determination of the number of jobs scheduled for service stations service the agricultural district and farms is based on the planned scope of work, tasks for increased productivity.

Scheduled jobs services for the maintenance and repair of livestock equipment

(Mpl) is given by:

$$Mpl = \frac{P}{B * K} = \frac{Q * P}{P_{year} * I * K}, \quad (6)$$

P - the amount of work in the planning period, USD;

B - the actual output per worker in the year, USD;

K - actual factor manning jobs workers in the reporting year;

Q - the actual number of employees during the year, people;

P year - the amount of work that is performed by our own efforts during the year, USD;

I - index of growth labor productivity.

Conformity between the number of jobs and workers to evaluate the degree of balance of jobs and workers.

The degree of balance of jobs and workers on the plan or in fact - is the ratio of the planned or actual number of employees to project the number of employees required to staff all the jobs with standard staffing ratio (workers - according to the project of works, including maps, charts work processes) .

The degree of balance (Kb) of jobs and workers in the services of maintenance and repair of machinery and equipment is determined by the formula:

$$Kcb = \frac{Qt}{Qp} = \frac{Qt}{Mt * Kn}, \quad (7)$$

Qt – total number of employees;

Qp - project number of employees of;

Mt- the overall average for the year, the number of jobs;

Kn – normative coefficient manning jobs workers.

Normative factor manning jobs workers determined the number of employees to be carried by one individual at a workplace standard (project) shift

index work on different machines, tools and equipment.

When the calculation of consolidated regulatory factor manning jobs employees determined by the product of the actual manning ratio of jobs to the index growth of the coefficient shift index workers, work vehicles, machinery, equipment or other similar indicator to the standard level.

The index growth of the coefficient the working shift index, the work of machines, equipment or other similar indicator to the standard level determined by the ratio of its standard (project) values to the level of the year.

Number of jobs in liquidation (M_b) in the planning period is calculated as:

$$M_b = M_s + M_i - M_t, \quad (8)$$

M_s - total number of jobs before the planning period, determined from the results of accounting;

M_i - entry jobs in the planning period the average annualized basis;

M_t - total annual average number of jobs in the plan period;

The amount of the jobs in the planning period is determined by the creation of new jobs and the need to replace inefficient jobs and tasks to improve the working and living conditions of workers.

Number of input and leaving jobs is determined by the balance of the development of jobs in the following areas: technical re-equipment and reconstruction, including organizational and technical measures, changes in the structure and scope of work for the maintenance and repair of machines and equipment for livestock facilities.

Balance of jobs developed simultaneously with the plan for economic and social development of the organization as an integral part.

Balance sheets scheduled jobs are developed together with other plans introduction of new technology jobs to implement scientific management, plans reproduction active fixed assets. The five-year development plan focuses on balancing jobs through modernization, including organizational and technical

measures. Modernization plans together with other materials based on the results of evaluation.

ACTIVITIES AND STEPS FOR CERTIFICATION, RATIONALIZATION, PLANNING AND ACCOUNTING FOR THE WORKPLACES

Organizational and methodological work begins with preparatory activities, including the publication of the order, which approves the composition of evaluation committees shall be governed by the order and timing of assessment.

Responsible for the work on certification, rationalization, planning and accounting jobs appointed chief engineer of the district agricultural service. This work includes all the functional and structural units that achieve the appropriate indicators to improve employment. The distribution of responsibilities between them produces the chief engineer. Industrial Engineering Department and Planning Department perform major work on certification and rationalization of jobs.

During the organizational and methodological work in conjunction with the administration of the trade union committee provides:

attended of advanced production workers, engineers, innovators and inventors. In job evaluation necessarily involves workers employed in them;

inclusion of measures to streamline jobs in the relevant sections of the annual and five-year plans for economic and social development programs to improve the scientific and technological level of production, as well as collective agreements;

study of the problems and methods of certification and rationalization of jobs, transfer of best practices and methods of work, the system of economic education, training and skills development in the workplace;

establishment of creative teams to develop measures to streamline job to turn this work into personal creative plans employees.

Work on coordination, organizational and methodological guidance for

certification, rationalization and accounting jobs, oversee its implementation, as well as the study and dissemination of best practices by the standing Attestation Commission.

The committee includes the heads or representatives of the Planning Department and industrial engineering department, senior engineer for the protection, safety at work, setters, representatives of the trade union organization, the advanced workers. Committee headed by the chief engineer of the district agricultural service.

The main tasks of the evaluation commission are:

- organization and implementation of accounting jobs;
- preparation of the necessary regulatory, technological and other documentation for the certification of employment;
- comparison of the actual values of parameters describing the technical and organizational levels of employment, working conditions and safety regulations and the definition of a comprehensive assessment of the workplace;
- a feasibility analysis of the characteristics of the workplace, the development of organizational and technical measures to improve the efficiency of their use, as well as monitoring the progress of activities;
- develop proposals to plan training of workers;
- compiling a summary report on the results of evaluation, rationalization and accounting jobs;
- Preparation of the draft order as a result of certification;
- preparation of proposals for the promotion of workers for their active participation in the certification;
- direction of certification results in a higher organization.

During the job evaluation and development of measures to rationalize their use findings and orders of the State Technical Supervision, fire inspections, technical labor inspectors, research materials of sanitary supervision.

Results of assessment are discussed at meetings of labor collectives and with their proposals published by the trade union committee agreed order, which

is determined by:

overall performance evaluation, rationalization and accounting jobs;

measures to rationalize with specifying of responsible persons for their implementation;

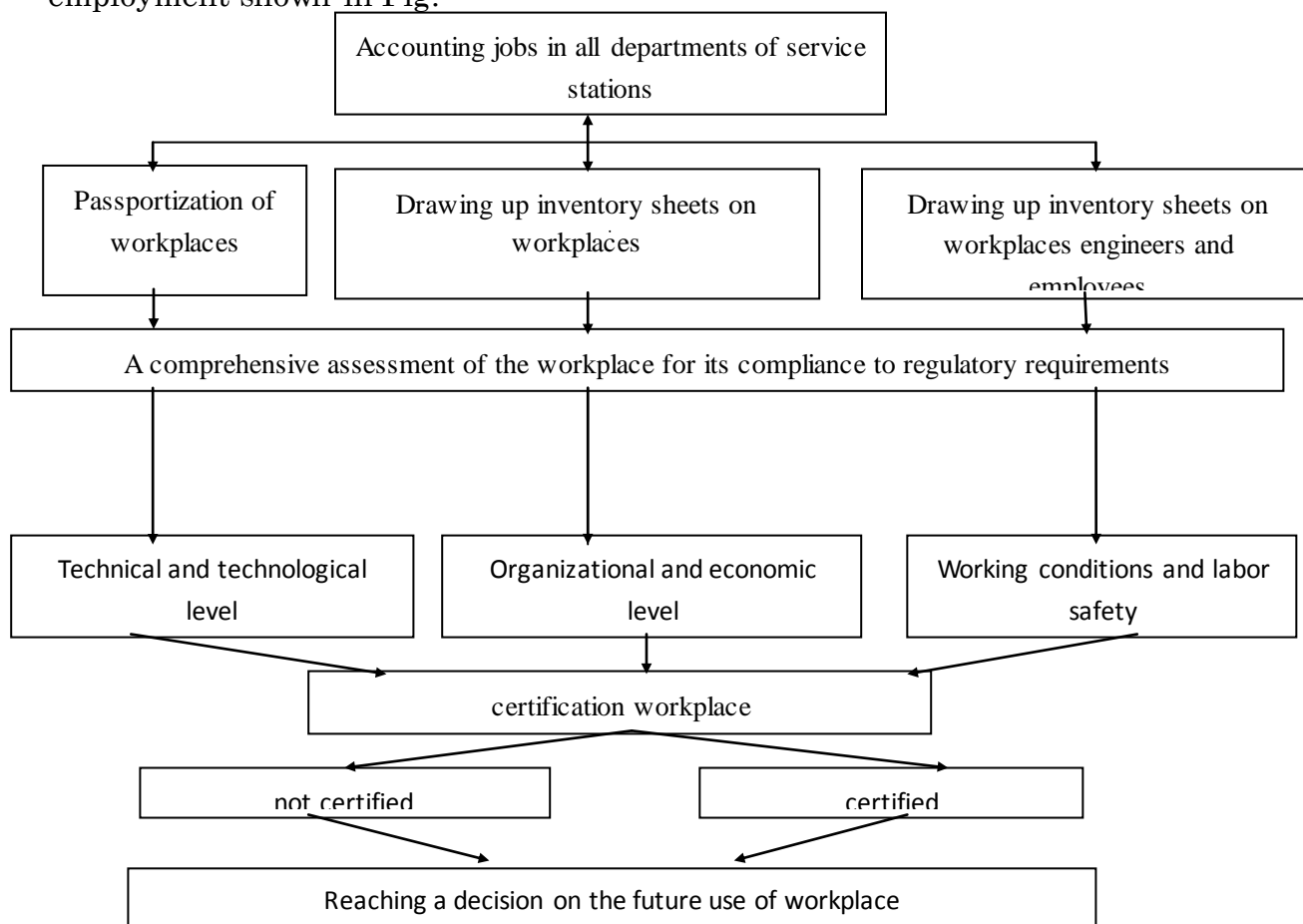
measures for the retraining of workers and the use of which would be released in connection with the liquidation and rationalization of jobs;

measures of moral and material incentives for workers for their active participation in the work done.

Material incentives for workers to develop and implement organizational and technical measures to streamline jobs based on appraisals, reducing inefficient jobs and absolute release of the number of employees in accordance with current regulations on bonuses for the creation and implementation of new technology.

can be developed specific provisions for bonuses of employees of the material incentive fund.

Organization of work for certification, rationalization and accounting employment shown in Fig.



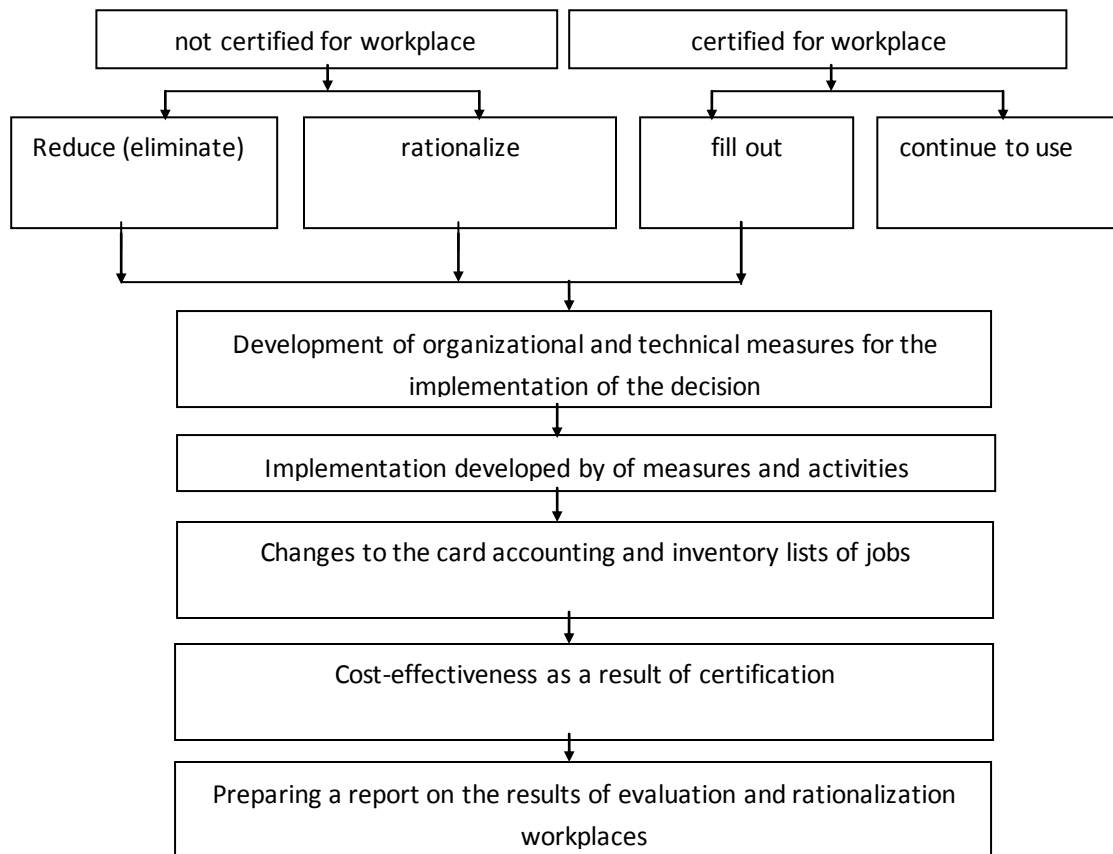


Fig. The scheme of work of comprehensive workplace certification

EVALUATION OF ECONOMIC EFFICIENCY FROM THE RESULTS OF CERTIFICATION WORKPLACES

As a result of certification, other things being equal, in the first place should be reduced number of unnecessary and inefficient jobs at service stations. Reduction and rationalization of jobs at service stations to further improve productivity. Calculations show that the presence of excessive and inefficient jobs at service stations and industrial engineering department farms leads to an overestimation of the assets, while reducing the level of productivity and ultimately reduces the effectiveness of the workplace.

Efficiency calculation of each workplace offers to produce by using the integral indicators as follows:

$$E = \frac{R}{C}, \quad (9)$$

E – effectiveness of individual workplaces;

R - Results in the workplace (manufacture of products), USD;

C – cost of workplace, USD.

References

- [1] Ковалёв, Л.И. Организационно-технологические основы технического обслуживания и ремонта машин в молочном скотоводстве, Минск: БГАТУ, 2012. – 224 с. – ISBN 978-985-519-530-7.
- [2] Ковалёв, Л.И. Основы организации технического сервиса машин и оборудования животноводческих ферм и комплексов, Минск: БГАТУ, 2011. – 136 с. – ISBN 978-985-519-434-8.
- [3] Kovalev, L. and Kovalev, I. (2012) The social and economic importance of certification and rationalization of employment service enterprises of agro-industrial complex, *Russian Journal of Agricultural and Socio-Economic Sciences*, 7(7), pp. 3-12.