UDC 338.432+65.011.56

RESOURCE EFFICIENCY ASSESSMENT OF DIGITAL TRANSFORMATION OF BUSINESS PROCESSES RELATED TO AGRICULTURAL LAND USE

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The Republic of Belarus has adopted the National Action Plan for the Development of Green Economy in the Republic of Belarus until 2025. One of the key measures for its implementation is the establishment and approval of sectoral resource efficiency indicators for the main resources used, corresponding to the best production practices in the priority sectors of the economy, including agriculture [1].

The digital transformation of business processes in sectors proceeds at different speeds. The most prosperous and dynamically developing branches are the finance and insurance, retail and venture. The least impact of digital technology and the scope of transformational change is in agriculture [2].

In the field of crop production and agricultural land use, organizations introduce and use advanced information technologies: Precision Farming, GIS, Remote Sensing, Internet of Things, Machine Learning. However, the use of some digital solutions that increase productivity in certain areas cannot be called a transformation. It requires a restructuring of business processes. It affects successive improvements in the structure of land use, personnel and organizational changes.

Resource conservation is a comprehensive process. Reduction of material costs of production is still important. Especially when it is expected from a digital transformation. It is possible to reduce planting material, fertilizers, pesticides and herbicides, fuel, etc.

Indicators of resource conservation are important both for the economic component of the organization and the local environmental policy. Labor productivity is also a social indicator. Let's finalize the resources and indicators for evaluating resource efficiency. This is the consumption of planting material, plant protection products, diesel fuel, gasoline, mineral fertilizer and labor savings.

The impact on the environment from the use of machinery depends on the fuel used. For rural areas, the environmental damage from carbon dioxide emissions

can be estimated at Br194 per ton of gasoline and Br193 per ton of diesel fuel[1]. These calculations are based on a transboundary carbon tax at a rate of €66 per ton of CO_2-equivalent on the European exchange [3].

Maintaining a certain level of nutrients requires fertilization. Assessing the effect of using digital technology to fertilize arable land includes determining the "before" and "after" nutrient content, taking into account saving the optimal amount of fertilizer to compensate for deficiencies.

The reduction in the cost of less productive labor can also be seen as an indicator of resource efficiency. For the calculation it is advisable to take the average nominal wage in the country. Keep in mind that not all workforce movements are driven by digitalization. These are the employees associated with the execution of operations replaced by digital innovation.

The calculation of the resource efficiency of digital transformation RE_d in the same calculation interval can then be described as follows:

$$RE_d = \Delta P_i + \Delta PP_i + 194\Delta D + 193\Delta G + (\Delta F_i * FP_i) + 19986\Delta WP_t, \quad (1)$$

where ΔP_i is change in the cost of used planting after the introduction of digital technologies (rubles); ΔPP_i is change in the cost of plant protection products involved in the cultivation of products (rubles); ΔD is change in volume of diesel fuel burned (tons); ΔG is change in the volume of gasoline burned (tons); ΔFi is change in the volume of applied *i*-th fertilizer (tons); FP_i is price of the *i*-th type of fertilizer (rubles per ton); and ΔWP_t is change in the number of jobs for the comparable period.

Resource Efficiency Assessment of digital transformation in crop production and agricultural land use involves reducing the use of material resources to a level capable of preserving the health of soils, simultaneously and (or) gradually increasing their natural fertility. This should occur on the basis of intrafield spatial heterogeneity. A certain set of digital tools will help to save different amounts of resources, depending on the physical and economic-geographical location and its financial and organizational structure. For these purposes, organizations determine the most optimal and at the same time effective combinations of digital agricultural technologies to achieve environmental and economic effects taking into account market research and available experience.

Resource Efficiency Assessment allows crop production organizations to simplify accounting for critical inputs in the ongoing process of digital transformation of agricultural production. Government bodies and organizations may consider the resource efficiency indicator based on the results of implementation of projects in the field of digital development, accompanied by

[1] The consumer price index for gasoline was taken as Br117.58, and for diesel as Br117.14. Data taken according to the National Statistical Committee of Belarus [4].

the supervised republican body of public administration, local executive body in accordance with the Presidential Decree of April 7, 2022 No. 136 [5] It is useful in the development of the regulatory framework in the field of digital development of sectors of the economy.

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