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INNOVATIVE MODEL OF POST-INDUSTRIAL SYSTEM OF MANAGEMENT OF AGRICULTURAL ENTERPRISES DEVELOPMENT

Abstract. We have proposed an innovative model of post-industrial management system for agricultural development. We have formed an algorithm for the operation of an integrated control system. We investigated that environmental management is a structural element of an integrated enterprise management system. It is investigated that the introduction of integrated management systems is a guide to the functioning of enterprises in the implementation of the development strategy of the state focused on achieving the goals of sustainable development. Automation of the control system is carried out by using state-of-the-art software such as BASE ERP, which is focused on the implementation of management functions.

Keywords: Integrated Management System, Agriculture, environmental management, digitization, quality management system, management tools.

The use of modern tools in the management system of agricultural enterprises of Ukraine is one of the most important tasks, as our country is an agrarian country. Development of modern approaches to business organization is focused on promoting the development of this sector of the economy in the direction of implementing the strategy of state development. One of the vectors of Ukraine's development is the fulfillment of the conditions of international partnership, which provides for compliance with the requirements of global quality standards of goods (works, services), environmental safety standards and standards of social orientation of
business. Ukraine is an agrarian state, as evidenced by the fact that in 2019 the GDP amounted to 3974564 million UAH. of which UAH 358072 million. in the structure of GDP is agriculture, forestry and fisheries.

The organization of the management system in agricultural enterprises should be focused on the implementation of the state strategy with the use of modern innovative tools in order to achieve the expected (planned) result in the shortest possible time with the greatest effect. The activity of agricultural enterprises is dynamic, as this process is influenced by both social factors and natural factors that are not able to regulate man, but can only predict and optimize the effects. Therefore, this branch of the national economy needs to be integrated into the management system of innovative financial and economic instruments, organizational, technical and technological tools and modern commercial approaches. This can be achieved only with clear cooperation and combined efforts of public administration, social sphere and private business. The state development strategy provides for the implementation of the Sustainable Development Goals of Ukraine for the period up to 2030 [1]. These goals can be realized only in the case of integration to the priority tasks of the enterprise also the development of measures aimed at reducing environmental impacts, overcoming economic inequality, adapting innovative digital technologies to the production process and the enterprise management system, and aimed at reorienting technological processes to sustainable consumption [2]. All these tasks must be implemented in a single model of enterprise management system. Our research has shown [3, 4] that only in the clear interaction of all vectors of improvement the maximum synergetic effect is provided, which directly proportionally determines not only the economic effect, but also contributes to the receipt of positive social benefits and contributes to the achievement of the environmental goals set by the strategic development plan of the enterprise. Decision-making by the management staff of enterprises on the implementation of sustainable development goals at each stage of the development strategy, indicates a high level of their professionalism, about the ability to realistically assess the potential effects of the use of modern tools, which are ways to increase economic results and indicate the perception of public policy focused on active interstate partnership and legal
international support. It should be understood that the implementation of sustainable development goals is a system of measures for continuous improvement in the management system, and not a one-time action. The implementation of the sustainable development strategy chosen by the agricultural enterprise is possible only with the constant introduction of more advanced methods and tools of the management system, which will be focused on the use of both institutional mechanisms and elements of continuous self-improvement. The multifaceted and specific nature of the agricultural business requires a balance of interests not only the agricultural environment, but above all: satisfaction of social needs, resource provision of each agricultural enterprise - as an economic unit, as well as the environment in which enterprises operate and society exists. Thus, to achieve the goals of sustainable development at the enterprise level is possible only with the application of a systematic approach to the organization of all processes into a single mechanism. We believe that only the introduction of integrated management systems in the activities of agricultural enterprises will make it possible to meet the conditions of the Sustainable Development Goals by 2030.

Thus, the requirement of Goal №8 presented in the Strategy of Sustainable Development of the State until 2030 provides for providing the population with decent work and promoting economic growth. It is planned to realize this goal due to the fulfillment of certain tasks, among which are - to ensure sustainable GDP growth through: modernization of production; rapid development of innovations; increasing the size of the country's export potential; bringing products with a high share of value added to foreign markets, etc. To assess the effects of the implementation of these measures at each stage relevant analytical indicators are evaluated, such as:

- Comparative analysis of the index of physical volume of GDP, %;
- Estimation of the share of gross fixed capital formation in GDP, %;
- Determining the share of exports of goods using high and medium-high level technologies in the production of total exports of goods, %;
- Assessment of Ukraine's place in the Global Innovation Index ranking [2].

Assessment of the dynamics of realization of sustainable development goals in terms of sustainable GDP growth based on modernization of production, development
of innovations, and increasing production efficiency on the basis of sustainable development and development of high-tech competitive industries during 2015-2019 conducted by the State Statistics Service of Ukraine, research data which we have summarized, and are presented in the table 1.

Table 1

Dynamics of realization of sustainable development goals in terms of sustainable GDP growth on the basis of modernization of production, development of innovations, and increase of efficiency of production on the basis of sustainable development and development of high-tech competitive productions, (2015-2019)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Years</th>
<th>The target for</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index of physical volume of GDP, %</td>
<td></td>
<td></td>
<td>90,2</td>
<td>102,4</td>
<td>102,5</td>
<td>103,4</td>
<td>-</td>
</tr>
<tr>
<td>The share of gross fixed capital formation in GDP,%</td>
<td></td>
<td></td>
<td>13,5</td>
<td>15,5</td>
<td>15,8</td>
<td>17,7</td>
<td>-</td>
</tr>
<tr>
<td>The share of exports of goods used in the production of high and medium-</td>
<td></td>
<td></td>
<td>19,2</td>
<td>17,3</td>
<td>16,8</td>
<td>17,0</td>
<td>16,4</td>
</tr>
<tr>
<td>high technologies in total exports of goods, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ukraine’s place in the ranking of the Global Innovation Index</td>
<td></td>
<td></td>
<td>64</td>
<td>56</td>
<td>50</td>
<td>43</td>
<td>47</td>
</tr>
<tr>
<td>Rate of return fixed assets</td>
<td>0.1194</td>
<td>0.1199</td>
<td>0.1195</td>
<td>0,1204</td>
<td>-</td>
<td>0.1300</td>
<td></td>
</tr>
<tr>
<td>Productivity change index, %</td>
<td>99,2</td>
<td>103,5</td>
<td>103,2</td>
<td>102,1</td>
<td>-</td>
<td>104,0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Generalized by the author based on [2]

We found that implementation of the main development strategy of the state provides gradual improvement of all its elements, which will improve performance and ensure positive changes in the development of each industry, including in the activities of agricultural enterprises.

At the level of agricultural enterprises it is necessary to form such a management mechanism that will be methodically effective from the standpoint:

- economic efficiency of agricultural enterprises;
- realization of social needs of workers and inhabitants of rural communities;
- reproduction of ecological characteristics of natural resources, which are affected by the activity of agricultural enterprises to the level determined by the state as acceptable.
Our proposed tools for implementing this mechanism are:

- integration of the environmental management system into the general management system of the enterprise with wide use of all tools focused on its effective functioning;

- introduction of ecological audit as an effective system of constant and periodic control over observance of the parameters defined in the strategic plan of the enterprise;

- integration of the quality management system into the overall management system;

- implementation of the mechanism of corporate social responsibility by introduction of occupational safety and health system in accordance with their requirements of international standards;

- involvement in the production process of services of small, micro and households;

- organization of the production process in the form of a closed cycle;

- use of benchmarking as a mechanism of comparative evaluation in the development of management decision algorithms;

- introduction of digital technologies in the process of business organization from the stage of strategy development, to the maintenance of the production process and its management.

The application of the above tools in the management system of the enterprise will make it possible to better control the risks of adverse effects of adverse factors. Such an integrated management system, the activities of which are based on the widespread use of innovative technologies and tools aimed at achieving the planned economic, social and environmental parameters.

It should be understood that to organize such a management system is possible with the step-by-step implementation of each of the above elements and the unconditional use of each of the principles that provide for the use of these tools.

The complexity of the production process and the multicomponent organizational structure of agricultural enterprises of Ukraine require changes not only at the enterprise level, but also at the level of the institutional system of public administration.
The proposed model of management system of agricultural enterprises provides for the interaction of macroeconomic processes at the state level with an integrated management system at the enterprise level. Macroeconomic impacts must be represented by a reformed state agricultural policy. Modern state environmental policy should provide for the widespread use of innovative approaches and be implemented through: legal support; extensive use of foreign and domestic investments; development of relevant institutions; implementation of measures aimed at increasing the level of competitiveness of agricultural enterprises; development of mechanisms for agricultural enterprises to enter foreign markets; promoting the development of existing regional clusters with the involvement of households in the production process.

At the enterprise level, the management system should provide for broad integration into a single mechanism: environmental management systems, quality management systems and occupational safety and health systems. Our proposed model provides for the transition of agricultural enterprises to a new level of management based on: widespread use of digital technologies; scientifically sound approaches, evaluated for the effectiveness of their implementation in a particular enterprise; application of elements of self-management of agricultural enterprise development.

The introduction of an integrated management system in the enterprise involves the development and application of certain rules and clear actions for each stage of the organization and conduct of agricultural business. At the same time, doing business becomes with clearly defined strategic, tactical and operational guidelines in the form of the developed ecological and economic policy of enterprise development. The activity acquires a definite, well-defined character, with pre-developed algorithms of actions and alternative solutions to probable problems. Achieving the goals of environmental policy developed by the company is taken into account during the organization and in the implementation of each business process. At the same time, the goals of sustainable development become an integral part of all business priorities. The general management system, which also integrates the quality management system and the system of occupational safety and health, takes into account the principles of their
operation in each business process. Therefore, integrated management systems are more complex, as they involve the inclusion of the principles of operation of each of the management systems in the overall management system of the enterprise. The inclusion of all principles and norms of implementation of the structural components of the integrated management system in the overall management system of the enterprise requires quality software. Thanks to the automated enterprise management system it is possible to develop algorithms for making management decisions aimed at implementing certain goals using the specified parameters, such as environmental guidelines, quality indicators, socially-oriented indicators. To implement an integrated enterprise management system, it is necessary to develop its environmental policy with well-defined targets (aspects) of environmental impact, quality standards of finished products and social guidelines within the system of corporate social responsibility of the enterprise. Using the planned indicators of impacts on various areas of the environment of the enterprise, none of the aspects will go unnoticed [3].

Using software filled with planned parameters of all elements and structures of the integrated control system, and through constant monitoring of factual data the level of sensitivity to non-compliance with the planned indicators becomes high.

When implementing certified management systems in the enterprise, the indispensable tool for implementing the principle of continuous improvement is the use of the Deming cycle. Its unconditional implementation encourages the company to continuous cyclical development and improvement of all components that form its targets and provide competitive advantages.

Therefore, documenting the business plan of the enterprise, recognition of economic, environmental and social commitments based on the use of the principle of continuous improvement of each of the elements of the integrated management system encourage the company to develop. In the process of developing a strategic plan is expected taking into account the probable risks in determining the size of the planned effect of each of the elements of the integrated management system. Anticipating risks always minimizes their negative impact on the end result. When implementing the Deming Cycle in order to continuously improve economic, environmental and social
effects. An important place is the constant monitoring, measurement, evaluation and analysis of elements of improvement. Constant control makes it possible to calculate the magnitude of the effects (positive or negative) on the effectiveness of the proposed elements of improvement.

At the level of agricultural enterprise it is advisable to determine the number of monitoring elements, depth of their analysis and frequency of its holding. Therefore, it is important to identify the elements that need to be directly monitored and measured.

An important tool of the integrated management system of an agricultural enterprise is the audit: internal and external. Internal audit should be an integral part of the economic activity of an agricultural enterprise. Because, through constant quality control of all elements of agricultural business technology and evaluation of the effectiveness of the management system of each of the processes provides a high level of efficiency of management decisions.

External audit is a tool for implementing an integrated enterprise management system, and serves as a method of obtaining evidence of compliance (non-compliance) of parameters, defined in the policy of enterprise development. If the internal audit represents an independent opinion of a person from the environment of the enterprise, then an external audit makes it possible to obtain an independent assessment of the management system in terms of its effectiveness, indicating weaknesses and positive characteristics. It is important in the process of covering the independent opinion of the external auditor development of recommendations, which are aimed at continuous improvement of expected indicators.

To determine the effectiveness of measures aimed at implementing elements of improvement of both the management system and the production process of the agricultural enterprise possibly through the use of analysis tools. It is important to analyze the effectiveness of the enterprise management system. Due to the obtained results of analytical characteristics, the suitability and effectiveness of a functioning management system are determined. Based on this analysis, the most effective tools of influence on production process are chosen, and on the management system process.
The main principle of the integrated certified management system is implementation of the principle of continuous improvement at the level of each of the elements of such a management system. The company should determine its own potential and the level of probable improvement at each stage of the life cycle of the company. It is also necessary to form a plan of necessary actions, to achieve the planned results both in the field of environmental management system and in the quality management system, and in the occupational safety and health management system. The implementation of each of the elements of an integrated enterprise management system should be focused on obtaining a positive economic effect. It is possible to implement such a cycle of continuous improvement only with the use of specific tools, such as: Deming cycle, Kaizen philosophy, Lean processes, Ishikawa diagram, method of cause and effect analysis FMEA (Failure modes and effects analysis) and other models of continuous improvement.

Thus, the introduction of an integrated management system in agricultural enterprises involves the development of certified environmental management systems, quality management systems and occupational safety and health systems. Developing an algorithm for relationships in such a complex system involves extensive use of causal assessment, which focuses on the effectiveness of the management system. The main condition for the functioning of such a management system in the enterprise is the implementation of the principle of continuous improvement.

The effectiveness of such a management system is ensured by developing and implementing a clear algorithm of actions for each of the processes planning, direct production of agricultural products and the process of selling products [3].

Automation of the control system is carried out by using state-of-the-art software such as BASE ERP, which is focused on the implementation of management functions. This type of software products ensure the functioning of subsystems: management, budgeting, planning, performance indicators, monitoring and analysis; accounting and financial accounting; HR; production management; sales process support, system of building relationships with customers; cost management and cost calculation and many other subsystems. This approach to the organization of the management system makes
it possible to fully implement all functions are defined for integrated management system.

Therefore, we proposed a model of agricultural enterprise management system with integrated systems: environmental management, quality management and occupational safety and health management system - is a way to achieve the main goal of the enterprise, that is, making a profit. Achieving this result is realized through the use of modern tools and automated means of accounting, evaluation, analysis. Thanks to the use of automated software products with additional subsystems (budgeting, planning, monitoring, personnel management, production management, cost management and others) the functioning of the integrated management system is realized through the possibility of adhering to the principle of continuous improvement at each stage of the production cycle of the enterprise.

References: