DIGITAL TRANSFORMATION OF FINE-WOOL PRODUCTION IN THE KYRGYZ REPUBLIC

ЦИФРОВАЯ ТРАСФОРМАЦИЯ ТОНКОРУННОГО ПРОИЗВОДСТВА В КЫРГЫЗСКОЙ РЕСПУБЛИКЕ

Abstract:
The article examines the relevance of the digital transformation of fine wool production in the Kyrgyz Republic, the benefits that the digital transformation of national enterprises engaged in the production of fine wool can provide. Internal digital transformation provides flexible management of resources and processes - this is one of the most important benefits that digital transformation of an enterprise can provide. It means close to 100% utilization of all production capacities (forage base, livestock, amount of arable land, tractors, combines, warehouses, trucks, etc.), people, maximum use of employee competencies, reduction of stocks, etc.

It is important to understand that the desired effect can only be achieved through digitalization along the entire value chain. An intelligent resource management system should be based on qualitative data about the actual state of equipment and people, their real capabilities, planned workload, and so on. In most cases, the solutions offered by the market
may turn out to be too general, not fully taking into account the specifics of the industry and the Kyrgyz specifics, which forces companies to create their own systems or engage in significant adaptation of existing ones, which determines the relevance of this study.

The purpose of the study is to develop tools of influence and their application in the fine wool industry in order to increase its profitability. As a result of the study, an analysis was made of the national industry of fine-wool sheep breeding and an analysis of the current state of production and processing of fine wool (key factors of production, existing indicators of production, processing, their dynamics for institutions of state regulation), existing problems are identified.

Conclusions. Creation and maintenance of a unified database, subject to their topological dependence, constant monitoring based on existing workflow, satellite imagery results, open Internet services and open software (significantly reducing the cost of creating and operating an information system) allow giving answers online to the most significant and dangerous changes in the environment - a change in the nature and competitive conditions, which will positively affect the country's economy. The studies were carried out on the basis of publicly available indicators of the Kyrgyz Republic.

**Keywords:** digital transformation, internal digital transformation, intelligent control system, tools of influence, economic development

**Annotation:**

In the article, the actuality of digital transformation in the tunic production industry in the Kyrgyz Republic is studied, advantages that may be obtained by using digital transformation at national enterprises, producing fine wool. Internal digital transformation allows close to 100% of resources and processes - one of the greatest advantages, which can be obtained by digital transformation. This means that the company may turn out to be too general, not fully taking into account the specifics of the industry and the Kyrgyz specifics, which forces companies to create their own systems or engage in significant adaptation of existing ones, which determines the relevance of this study.

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Introduction

With the rupture of economic ties, the production of concentrated feed practically ceased, which led to a reduction in the number of sheep and a decrease in wool production. Lack of financial resources from private farmers-sheep breeders does not allow the full use of remote high-mountain pastures both in summer and in winter. In recent years, more than 6 million hectares of remote summer and winter distant pastures have not been used at all, including such as Son-Kol, Ak-Sai, Arpa, Alai.

This is explained by the fact that in connection with the transition to market relations in the economy, the entire livestock of the former collective farms has been distributed to private hands. But a private owner who has 50-60 or less heads of sheep and goats, several heads of cattle, cannot graze his livestock on remote summer and winter pastures, since he needs transport to move there, which not all sheep farmers have.

As a result, private farmers-sheep breeders keep their cattle all year round on the spring-autumn pastures near the village, which make up only about 2.6 million hectares. The load on these pastures has reached 5-6 conditional heads instead of the optimal 1.5 heads, and as a result, the degradation of the herbage of these pastures has increased.

To eliminate these shortcomings and prevent the degradation of the herbage of pasture resources, joint efforts and regional and district state administrations, aiyl okmotu jointly with the association of sheep breeders to form flocks, herds in a planned manner and herds for each aiyl okmotu and annually overtake in an organized manner them to now unused distant pastures. It is obvious that the solution of the problems facing the agricultural enterprise is beyond the power (there are no necessary financial, technical, human resources) with the existing organization of production - private household plots, farms and even collective ones. We need a large production association - a holding company, a state-owned agricultural company that has these resources.

It is necessary to digitally transform the accepted schemes for managing them, which includes not only computerization, but also their reorganization.

Application of geoinformation methods in the management of fine wool production

In the course of production activities, permanent or temporary production links are established between employees of agricultural enterprises and organizations and their structural subdivisions (workshops, brigades, departments, sites, farms, services, etc.). These links are informational, technological, personnel, financial and managerial in nature. The totality of employees (managers) and links (divisions) of the management system, as well as the connections established between them form the structure of enterprise management.

The management structure is expressed in the management system, composition of managers, relationships and subordination of links (sections, brigades, workshops, farms, departments, services, etc.), staffing tables, staff composition, regulations and job descriptions. The management structure reflects the hierarchy (subordination) of the enterprise management bodies. The effectiveness of the functioning of the enterprise as a whole largely depends on the management structure.

The enterprise management structure is created under the influence of external and internal factors. External factors include: the general political and economic structure in the country; current legal framework; economic situation in the agro-industrial complex; climatic and geographical conditions; territorial location; the level of scientific and technological progress in the agro-industrial complex; availability of means of communication and transport, etc.
Accordingly, internal factors include; enterprise goals; production size; level of specialization, organizational structure; availability of personnel and the level of their qualifications; availability of start-up capital and funds; the level of technical equipment; applied production technologies, etc.

To organize the unified work of all departments of the enterprise, a workflow is created in paper and electronic form with reflection it contains all the data necessary to manage the enterprise. The use of geoinformation methods in the management of fine wool production is a vital necessity.

Creation of databases containing interdependent information about the climatic features of the area, soil fertility, crop production, animal husbandry, their products, sales, logistics, optimization of this dependence by means of mathematics and geoinformatics becomes an urgent need of the time.

Computerization of management puts forward the task of algorithmization of solving problems from the point of view of the owner of the territory:
- what is the object of control;
- from whom and what documents can serve as initial data;
- how to extract the information necessary for control from these documents;
- in what form the information necessary for decision-making is obtained:
  - in the form of an image on the screen;
  - in the form of a reference;
  - in the form of a document of a certain form.

An information system is needed that, based on satellite imagery, analysis of internal document flow and analysis of departmental reporting materials, would give the owner of the territory a real picture.

Principles of building a geographic information system

The geographic information system links the information presented in the form of internal document management forms to the image of the area in the form of topographic maps, photoplans. Localization is carried out at the level of the region, enterprise and subordinate units (sections, brigades, workshops, farms, departments, services, etc.).

Principles of building the system:
- all the necessary information is already available in the forms of internal workflow; no additional manual entry is required;
- a high-level GIS (MapInfo, QGIS) is used as the core of the system;
- a friendly interface is created that replaces the work on the formation of complex queries to find the necessary information by working with the menu bar;
- as information about the surrounding space, orthophotomaps made from up-to-date high-resolution satellite images, open sites of the "Early Warning System" http://sropasture.kg and "GISAR of the Public Cadastral Map" http://darek.kg are used - this information is updated using Internet technology, for which the software provides a special menu for working with existing Internet platforms.

Basis - United database, functioning in a single data format. Use of freely distributed PostGreSQL DBMS as a unified repository of spatial data with the PostGIS extension, as well as a tool for filling spatial data in geographic information systems "MapInfo", "QGIS", significantly reduce the cost of creating and maintaining information systems.

In a federated database, for example, information can be concentrated:
- the amount of precipitation in autumn, winter, spring, what is the forecast for summer,
- built on these data precipitation map,
- maps of soils, vegetation,
- climate maps,
Fig. 1 Expected values of the average monthly air temperature in March 2021 for the territory of Kyrgyzstan.

Fig. 2. Map of state reserves and natural parks
Fig. 3 Map of the location of large reservoirs in the territory of the Kyrgyz Republic

Fig. 4 Climate map of the territories of the Kyrgyz Republic
Fig. 5 Climate map

Rice. 6. Location of pastures in Kyrgyzstan by seasons of use
Based on this information, using the tools of analysis and synthesis of the geographic information system, schedules for the use of the pasture territory, logistics are planned (which flocks, by what roads, by what transport are delivered to the pasture, how and where the products are delivered for storage, processing, sale).

Information about the predicted volume of production, and then received, is placed in a unified database and on their basis (all data are topologically connected) the work of the sheep farm is organized:

- information about the feed base, feed logistics is used;
- determines the volume of costs for the maintenance of livestock, the volume of finished products.

![Fig.7. Economic map of the Kyrgyz USSR](image)

Information is entered into the database, observing the conditions of the topology of the generated data. In the department of economics of production, accounting departments, which have their own sector of data in the unified database, there are objective data on the cost of production, opportunities to decide where and how to sell products, and resolve issues with bank loans.
Let's call a team that includes representatives of all functional areas a transformational office or a competence center. The work of this team will require changes in the work of all functions.

Specialists from the transformation office should not work in isolation from representatives of the relevant functional areas, otherwise the result of the project may be far from the organizational, technological and business realities of the current production. In fact, this is the difference between a large transformational office, which is practically a self-sufficient capable unit, and a modest center of competence, which should perform the functions of strategic planning and internal consulting.

**Internal and external aspects of digital transformation**

Digital transformation has internal and external aspects. The digitalization of the internal contour of the enterprise consists of fairly understandable, but expensive and difficult to implement steps: updating a hopelessly outdated fleet of equipment, digitizing warehouses, creating digital profiles of employees, creating a planning system and management of the internal loop of production, the formation of new competencies of employees, the creation of a new culture, and so on.

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It is important to understand that the desired effect can only be achieved through digitalization along the entire value chain. An intelligent resource management system should be based on qualitative data about the actual state of equipment and people, their real capabilities, planned workload, and so on. For most industries today there are market technological and information solutions that allow you to implement this task either on a turnkey basis or in parts.
In this regard, it should be noted the existence of a large number of Internet resources, in particular - https://Sdelanounas.ru, blog "New and modernized agricultural enterprises". In some cases, the solutions offered by the market may turn out to be too general, not fully taking into account the specifics of the industry and Russian specifics, which forces companies to create their own systems or engage in significant adaptation of existing ones. In any case, this task cannot be solved by a single enterprise.

There is a need for the existence of a unit under the Ministry of Agriculture, engaged in scientific, informational, educational activities, including research, development, educational organizations.

The situation is more complicated with the digitalization of the external contour, which, as mentioned earlier, is to build an ecosystem. An ecosystem based on the inclusion of an enterprise in a number of digital platforms should provide the opportunity to interact with partners, customers and the state at a new level.

Digital transformation must answer the most essential and a dangerous change in the environment - a change in the nature and conditions of competition. Digitization everywhere is intensifying competition like never before.

Today, aggregator sites and electronic trading platforms such as eBay, Amazon and AliBaba make it possible to conveniently and quickly compare millions of similar offers around the world and choose the most functional one and cheap stuff. There are practically no domestic digital platforms for the real sector, and embedding in foreign platforms in the long term may threaten the sovereignty of the country's economy.

Major companies and holdings are able to build their own industrial IT solutions. But you need to understand that a high-quality mature industry platform is a very complex IT product, the creation of which is beyond the power of small and medium-sized businesses.

Analysis of the accumulated objective data makes it possible in the ministry to determine the optimal size of an agricultural enterprise: private household plots, farming, collective or large agricultural firm, holding with farming on a modern scientific and industrial basis.

Creation and maintenance of a unified database, subject to their topological dependence, constant monitoring based on the existing workflow, satellite imagery results, open Internet services and open software (which will significantly reduce the cost of creating and operating an information system) will require careful development of technology based on the use of a combination of scientific and practical data.

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**Conclusion**

Create and maintain a federated database subject to their topological dependence, constant monitoring on the basis of the existing workflow, the results of satellite imagery, open Internet services and open source software (significantly reducing the cost of creating and operating an information system) allow giving answers online to the most significant and dangerous changes in the environment - a change in the nature and competitive conditions, which will have a positive impact on the development of the fine wool industry in the Kyrgyz Republic.
References:


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