

Information support in the management of complex organisational systems

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Abstract. The priority of modern development of socio-economic processes is the trend of widespread implementation of information and digital technologies aimed at automating a variety of activities, including in the agricultural sector. The article deals with the information support in the management of the agroindustrial complex, which is a complex organizational system. The analysis of agroindustrial complexes management areas, their goals and objectives of functioning has been made. Based on the conducted research, the stages of information support and digital support are formed and the structure of the information system, allowing to achieve the strategic goals of management, is offered. **Key words:** management, agroindustrial complex, agricultural production, information support, organisational system, digitalisation, integrated security.

1 Introduction

Research on information processes in organisational systems is a priority in the existing and developing theory of organisational system management [4].

In this study, the authors are guided by scientific research of the theory of management of socioeconomic systems - the theory of active systems [1, 2] on the example of agroindustrial complexes (hereinafter - AIC). The choice of the object is determined by the fact that agroindustrial complexes are a complex organisational structure that combines various branches of agricultural production and consists of numerous active elements of functioning.

The characteristics of the object of research as an active system are its multi-element nature, dynamism, and order of functioning to solve specific goals and tasks - production, processing, storage and delivery of agricultural products to the consumer, which determines the formation and exchange of information between its subsystems and relevant elements.

Agroindustrial complex management is a process influenced by external and internal environment information data. The functioning of the AIC management system is determined by the internal structure and the links between them, which are ensured by the appropriate provision of information with external and internal environment data.

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Information support of elements of the management system of the agroindustrial complex forms the information system that allows the generation of managerial decisions in accordance with strategies to achieve the goals of efficiency and effectiveness.

2 Materials and Methods

The analysis of the structure of the agroindustrial complex as an active organisational system allows us to distinguish four modern lines of operation: development, production, processing and interaction with the consumer (Figure 1).

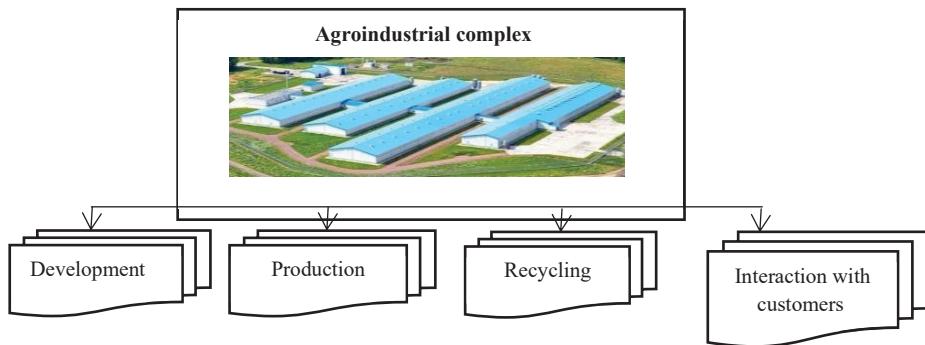


Fig. 1. Directions for the functioning of the agroindustrial complex.

Let us consider these directions.

The direction "Development" is connected with the implementation of the strategies established by the state policy within the framework of the national project "Development of the agroindustrial complex" [6, 7], and includes the blocks of production and development of import-substituting products, the creation of a mechanism for effective management of agricultural land, the formation of accessible social and digital infrastructure in rural areas to create their attractiveness for young professionals and to stimulate small and medium businesses in this sector of activity.

The production block is directly related to the cultivation of grain, meat, and other agricultural products, raw materials, and foodstuffs. The products produced are subject to processing, which consists of drying and packing grain, cereals, vegetables, and fruit, making products from agricultural products, and producing feed for the livestock industry. This is the activity of the agroindustrial complex in the Processing Block.

"Interaction of the agroindustrial complex with the consumer" is based on the analysis of consumer demands to the assortment, quality and logistics of supply of agricultural products.

The implementation of the above directions is carried out through the adoption of managerial decisions at all levels of management.

With a variety of classifications of management decisions [3], they are all provided by the sufficiency or insufficiency of information. Lack of information in making management decisions creates conditions of uncertainty and risk.

Under these conditions, it is necessary to use special mathematical methods that allow you to justify management decisions, and in some cases make it possible to find and choose the best solutions [5].

Under different conditions of sufficient information support, the development of a management decision is associated with the analysis, processing of information about the characteristics, organisational structure, objects, and subjects of active systems, in this case

the agroindustrial complex. Based on the listed characteristics, information support, the process is divided into several stages (Fig. 2).

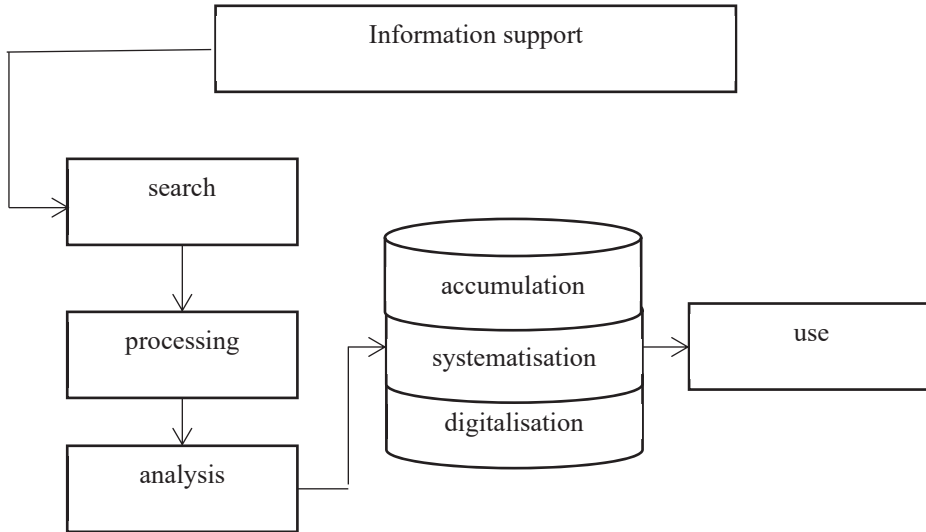


Fig. 2. Stages of information support for the AIC organisational system.

The creation of a unified information space in the agroindustrial complex will improve the quality of managerial decisions, reduce the time spent on their adoption, and automate organisational activities. The information space in the agroindustrial complex depending on the types of information can be considered in the following aspects: legal, financial, personnel, resource data. The construction of interaction processes of the mentioned data, where the centre is the subject of management, accumulating information in order to influence the object of management, contributes to the maximum achievement of the management goal.

The training of qualified personnel for the agricultural sector in educational institutions of secondary vocational and higher levels should be practise-orientated not only in terms of students' internships in agricultural enterprises, but also in terms of mandatory participation of representatives of agricultural enterprises in student scientific conferences, including reports. The timely informing of students about current issues, problems of agroindustrial complex development, is an effective element of the continuous cycle of personnel training, improving the quality of managerial decisions.

It is impossible to update production, educational and scientific processes in the absence of relevant legal information. The use of legal databases in the agroindustrial complex contributes to training, methodological, and law enforcement processes. The adaptability of specialized terms, according to which the user searches for information in legal databases, is important. Therefore, legal reference systems should have functions of semantic links between different characteristics of groups of concepts.

The information interaction between agricultural enterprises and regulatory authorities is facilitated by the existence of an established electronic document management system, through which the solution of current tasks, including tax and financial ones, is ensured. Consultative information interaction between business entities and departmental bodies excludes the cases of illegal actions in the production activity.

The systematised information about the innovative developments, resource-saving technologies for the agricultural enterprises is used in practice by the agricultural producers,

which ensures the dynamics of the industry and expands the opportunities for the participants of the agricultural market.

The digital interaction of the legal, financial, human, and resource components of the information space of the agroindustrial complex is a complex organisational structure that contributes to the development of digitalisation of the agroindustrial complex.

3 Results

Different types of information: legal, financial, human resources, resource information have different sources and are intended for different organisational structures of the management system, both interrelated in their functional area of activity and not interrelated. Information flows can also differ in terms of volume and category of needs for it. Information flows can be represented as an outline (Figure 3).

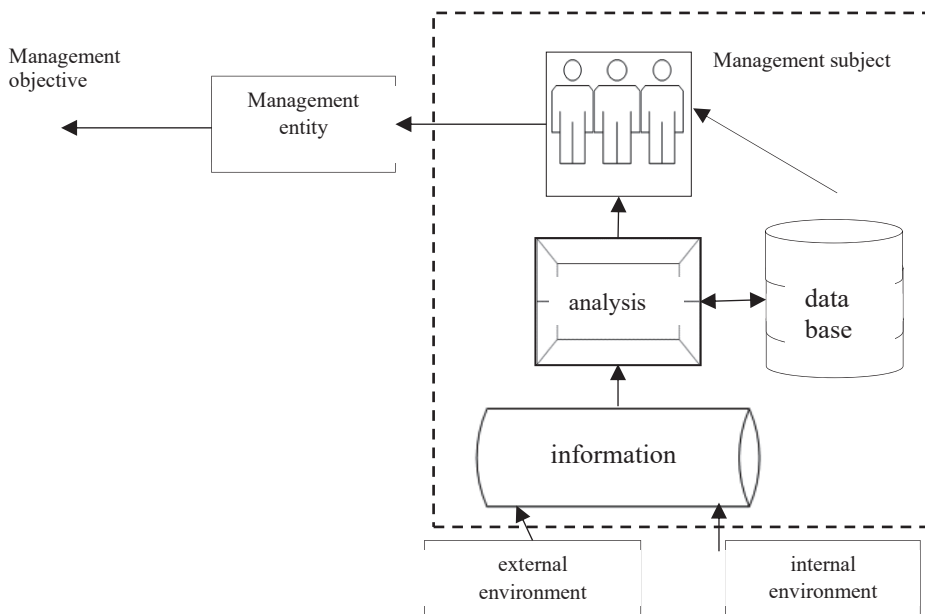


Fig. 3. The contour of information flows in the AIC.

As is evident from the information flow shown in Figure 3, the management entity receives information from the external and internal environment. The control subject receives information from the external and internal environment, which has undergone the stages of entry, processing and analysis.

The information comes from the formed database. The subject of management, possessing information, forms a management decision for objects of management, in order to solve the problems of functioning of complex organisational systems, including AIC. The application of this structure of the information support loop allows one to obtain:

direct access of the subject of management to the information that has passed the stage of analysis and evaluation;

completeness and multiple information about the factors of external and internal environment and their changes;

free, prompt access to the subject's information database;

formation of an automated document flow and information exchange communication environment;

creation, development of digital and technical infrastructure of subsystems and elements of the AIC system.

4 Discussion

Reducing the risks of unreasonable management decisions based on situational and subjective perception of the management subject, special attention should be paid to the creation of an information support infrastructure in the organisation of the functioning of the agroindustrial complex system. Information support infrastructure contributes to the automation of management processes, which is one of the priorities for increasing efficiency and effectiveness. The indicators of effectiveness should include the reduction of financial costs, labour resources, the time of implementation of management processes. The objectives of the state policy of development of the agricultural and industrial sector can serve as performance indicators [6, 7].

5 Conclusions

The analysis of the current state of information support for the functioning of agroindustrial complexes leads to the conclusion that it is underdeveloped and sometimes simply absent. As the assessment of information systems of individual enterprises of the agroindustrial complex shows, when they are available, they function separately from each other.

The consideration of the information support of agroindustrial complexes under modern conditions creates the prerequisites for further scientific research in this area, the basis of which is the creation of automated management systems and the evaluation of the impact of their application for the achievement of efficiency and effectiveness.

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