

Ministry of Education and Science of Ukraine
Poltava State Agrarian University

**SECURITY MANAGEMENT OF THE XXI
CENTURY: NATIONAL AND GEOPOLITICAL
ASPECTS. ISSUE 3**

Collective monograph

In edition I. Markina, Doctor of Economic Sciences, Professor



Nemoros s.r.o.
Prague, 2021

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*Recommended for publication by Academic Council of
Poltava State Agrarian Academy
(Protocol No.15 dated 23 February 2021)*

*Recommended for publication by Academic Council of
the Institute of education content modernization of
the Ministry of Education and Science of Ukraine
(Protocol No. 2 dated 24 February 2021)*

*Recommended for publication by Scientific Institution of
the Information Systems Management University
(Protocol No. 1-21 dated 25 February 2021)*

The monograph is prepared in the framework of research topics: «Management of national security in the context of globalization challenges: macro, micro, regional and sectoral levels» (state registration number 0118U005209, Poltava State Agrarian Academy, Ukraine), «The concept of investment and financial and credit support of technical and technological renewal and development of agricultural production as a component of food and economic security» (state registration number 0120U105469, Poltava State Agrarian Academy, Ukraine), «Macroeconomic planning and management of the higher education system of Ukraine: philosophy and methodology» (state registration number 0117U002531, Institute of education content modernization of the Ministry of Education and Science of Ukraine, Ukraine), «Infocommunication aspects of economic security» (Protocol 1-21 of February 25, 2021, Information Systems Management University, Latvia).

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Nemoros s.r.o.,
Rubna 716/24, 110 00, Prague 1

ISBN 978-611-01-2365-5

Nemoros s.r.o.,
Rubna 716/24, 110 00, Prague 1
Czech Republic, 2021

to create a marketing service and proved that such investments will be effective, as the payback period is less than a years, benefits-cost ratio – 4.45, and return on investment – 13.7.

Table 8

Determination of reserves

Work code	Reserve, days
A	0
B	2
C	2
D	0
E	0
F	0
G	0

We offer to use network modeling when creating a marketing service. This will allow more efficient management of material, financial and labor resources. Thus, the implementation of the above proposals will significantly increase the efficiency of production and sale of agricultural products.

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**TECHNOLOGY MANAGEMENT IN THE CONTEXT OF
IMPROVING GOODS QUALITY AND SAFETY**

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Currently, when Ukraine is integrating into the markets of the European Union, the enterprises face a high level of competitiveness and specific barriers in this way. These processes motivate the Ukrainian enterprises to improve

the food production standards to raise their competitiveness compared to the foreign counterparts [5]. Nonetheless, Ukraine underestimates the role of technology, technology markets, and technology competition. Most of the technologies, regarded as high-class, sophisticated, new, unique, and progressive in our country, are not sold in either internal or foreign markets [4].

The introduction of technology management at agri-food enterprises may become one of the options for upgrading this situation. In its turn, it will create new advanced opportunities to improve the quality and competitiveness of products not only in the domestic market but also abroad.

Lihonenko L. states that the purpose of technology management is to ensure the technological development of the business organization (enterprise). In other words, it is the purposeful and continuous (constantly-organized) process of irrevocable changes in technologies of the enterprise economic activity. These changes determine the proper development of fixed assets that provoke them, the personnel who implement and use them, and intangible assets that promote their creation and use. Altogether, they allow ensuring the technological competitiveness of individual entities and the development of the technology market as a whole (due to modeling both demand and supply of technological ideas and their developments) [8].

Actually, the quality of products depends greatly on the level of their production, and thus, one of the possible ways to ensure the certified quality of the goods is to improve the technological support for their production. Food-producing companies, in turn, must be able to obtain quality technologies and machinery that have passed the necessary tests and trials, qualified personnel, including organizational and methodological assistance in creating quality management systems [7].

Product quality, being the most important criteria for the operation of the enterprise in conditions of market over-saturation and non-price competition, stimulates improvement of the technical level of production, which influences the scientific and technological progress rate and production efficiency, in general. All these factors cause a significant impact on the intensification of the economy and increase the competitiveness of domestic goods and living standards of the population [1].

According to Ilchenko N., food safety constantly concerns consumers. Many food safety standards have been published in recent years to improve food safety. However, there still exists some divergence in approaches to the solution of the issues highlighted by manufacturers, suppliers, sellers, and consumers. National legislation, standards, regulations, and requirements for food producers must comply with international documents so that Ukrainian producers could have opportunities to enter new and promising markets. The creation of appropriate economic and legal conditions for the

production of high-quality and safe food would allow providing people with such foodstuff and could strengthen Ukraine's presence in the world market of agricultural products [5].

In the conditions of constant transformational changes, the production of high-quality and safe products at agro-food enterprises requires immediate effective solutions, which consequently will provide a basis for improving the technology of production, processing, storage, transportation, and sale of products.

Zhavoronkov G. states that improving the quality of products and services certainly positively affects any enterprise's activities. Current economic conditions force every company to implement and support a modernized management mechanism of the appropriate (exemplary) quality. The defining elements of this particular management that most significantly impact the production and supply of competitive products on the market are: standardization and certification of products; standardization and certification of the internal systems of quality; state control over the observance of standards, norms, and regulations, including the responsibility for their violation; in-house technical quality control [2].

One of the most important issues in the field of food quality and safety is storage, processing, transportation, and sale of agricultural products. Currently, in Ukraine, the quality indicators low rates here are due to the products' non-compliance with technological norms, lack of proper refrigerant tanks, low sanitation, poor quality packaging, presence of food additives, processing raw materials by adding various food colorings, acids, alkalis, enzymes, etc. [7].

To avoid, or at least, minimize such breaches, it is necessary that the management system of the agri-food enterprise determined comprehensively the priorities for the development of their technical and technological capabilities. Key components of the technical and technological development of the agri-business sphere are shown in Fig. 1.

It is advisable to start the process of improving the technological management of agricultural production with the in-depth study of the technology structural elements and do it in terms of the basic production resources consumption. The dynamics and correlation of the main inputs in production in the technological processes affect the volume of production costs and the product's competitiveness rate. Under the current conditions of socio-economic development of the state, lowering energy-use in crop and livestock products production is the most important goal for developing an effective management system of production processes to ensure energy independence of the enterprise [3].

The agri-food enterprise managers must take the following measures to ensure technical and technological development in the context of technology

management [6]:

- free the enterprise from the excessive equipment, machines, and other fixed assets or rent them;
- provide timely and high-quality planned preventive and capital repairs;
- care about timely renewal of a particularly active part of the fixed assets to prevent their excessive moral and physical wear and tear;
- implement new equipment and advanced technologies, namely low-waste, non-waste, energy, and fuel-saving ones;
- improve the production and labor organization to reduce the loss of working time and downtime of machinery and equipment;
- improve the quality level of preparing raw materials for the production process;
- increase the level of concentration, specialization, and integration of production;
- raise the qualification level of service personnel;
- purchase high-quality fixed assets.

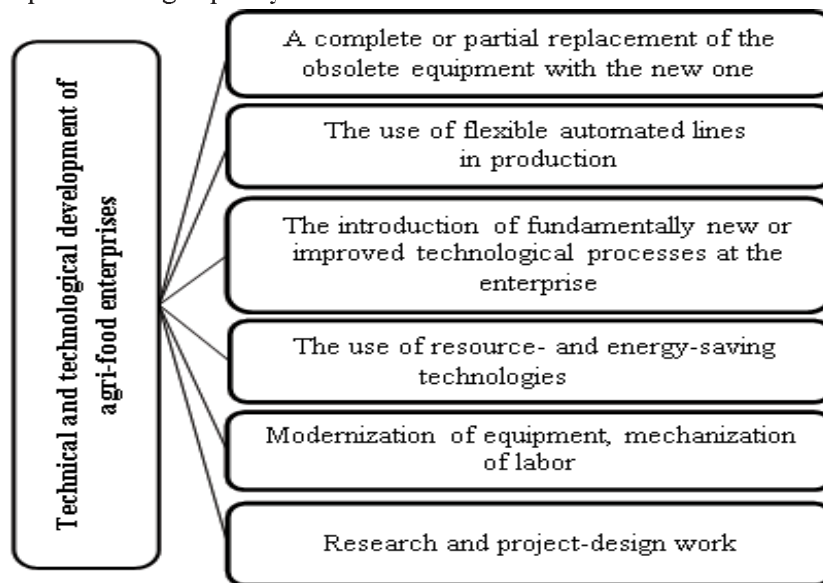


Fig.1. Basic components of technical and technological development of agri-food enterprises

Source: developed by the authors on the basis of [1]

In the context of ensuring high-quality and competitive product production, the implementation of effective technology management requires taking into account the innovative potential of the agri-food enterprise.

Loshchyna L. and Milashenko V. argue that we should include the following indicators of different components of management system to determine the innovative potential of the enterprise [10]:

1) the financial component (the rate of new technology acquisition costs in the total internal cost of production; knowledge intensity of the manufactured products; the rate of intellectual property; the rate of intangible assets costs in total research and development costs; the rate of the costs of the personnel's training in the total amount of expenditure on research and development);

2) HR (personnel) component (the proportion of workers employed in research and development to the total number of employees, the availability of highly-qualified personnel, salaries of scientific and technical workers);

3) the logistical component (progressive equipment, upgrading equipment index, the coefficient of introduction of new technology);

4) information component (costs of information activities, the ratio of personnel engaged in information activities);

5) market component (indicators of new product development; the part of innovative products in total industrial production; profitability of innovative products; the competitiveness indicator of the new products).

Further research is needed to characterize the forms of technological development of the enterprise of the agro-food sphere. Thus, L. Lihonenko identifies the following forms of enterprise technological development:

1) research-based – development of innovative technological solutions via financing internal and/or external research;

2) legal – the acquisition of property rights to the created objects of intellectual property (patents, licenses for the use of inventions, industrial designs, utility models); concluding sales/purchase agreements of technologies and know-how, etc.;

3) import-based – acquisition from other subjects of innovative activity the rights to use objects of intellectual property in their economic activity;

4) material – modernization and renewal of fixed assets through the purchase or leasing of equipment, machinery, accessories, etc.;

5) HR (personnel) – specialized training of the enterprise employees and/or involvement of external specialists if necessary for the technology effective implementation;

6) product-based – the development of new products (goods and services) based on new technologies;

7) export-based – transfer to foreign commercial or non-commercial companies the right to use new technologies developed at the enterprise [9].

Thus, to improve the quality and safety of goods, the managers of agri-food enterprises need to make balanced management decisions, taking into account the peculiarities of technology management and the abovementioned

scientifically-grounded conclusions. Qualitatively formed and implemented technological management of the enterprise will strengthen and form new extended opportunities in terms of quality, safety, the competitiveness of goods and ensure food security of the country.

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EFFICIENCY EVALUATION OF ELECTRICITY PRODUCERS USING DEA METHOD

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Economic changes affect the state and further development of enterprises of energy sphere. Influenced by external and internal factors, these enterprises have to adapt to the new situation, create new relations with partners, forming the energy supply chains (ESC).

In energy supply chain management the evaluation of the energy producers' efficiency plays crucial role. In terms of energy markets if we consider the functions of participants of ESC, it is obvious that the suppliers in ESC do not produce energy but only sell it to the consumers. This means that they are just intermediaries between producers and consumers. That is why it is essential to estimate not the efficiency of suppliers but efficiency of producers of energy services.

However only a few researchers pay attention to this problem. In addition, evaluating the efficiency they often ignore the influence of these enterprises on the environment, which is extremely important in terms of sustainable development and energy security.

Today there is no common methodology to evaluate the efficiency of energy producers, which would take into account their environmental influence. That is why given research aimed to form the methodological toolkit, which would allow decision makers to identify non-efficient participants of ESC and would create a basis to further benchmarking, development of ways to improve efficiency and, if it would be necessary, to change the structure of ESC.

The evaluation of enterprises should be conducted based on objective and sufficient for analysis data. These data can be obtained from financial records, which reflect the results of enterprises' work during some period of time. Moreover, data on emission of harmful substances can be calculated based on the unit emissions of consumed resources.

For the further analysis, we will consider energy systems of energy