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# УПРАВЛІННЯ РИЗИКАМИ АГРАРНИХ ПІДПРИЄМСТВ ВИРОБНИКІВ ЯЧМЕНЮ В СОЦІАЛЬНО-ЕКОНОМІЧНИХ СИСТЕМАХ

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## RISK MANAGEMENT OF AGRICULTURAL ENTERPRISES OF BARLEY PRODUCERS IN SOCIO-ECONOMIC SYSTEMS

*Дана стаття присвячена дослідженню управління ризиками аграрних підприємств виробників ячменю в соціально-економічних системах. Метою дослідження є визначення основних ризиків, з якими стикаються аграрні підприємства виробники ячменю, і розгляд можливих стратегій і інструментів для їхнього управління.*

*Управління ризиками в аграрних підприємствах, спеціалізованих на вирощуванні ячменю, в соціально-економічних системах є критично важливою складовою стратегічного планування та управління для забезпечення стабільності і прибутковості цих підприємств. Ячмінь, як одна з основних культур, що використовується в різних галузях, включаючи пивоварну промисловість та корм для тварин, стикається зі значними ризиками, які можуть вплинути на виробництво і прибутковість. В даному дослідженні розглядаються ключові аспекти управління ризиками в аграрних підприємствах, що спеціалізуються на виробництві ячменю, з фокусом на соціально-економічних аспектах.*

*Аграрні підприємства в Україні та в багатьох інших країнах знаходяться в постійному контексті змінних умов, які включають в себе природні фактори, економічні коливання та соціальні впливи. Основні ризики, з якими стикаються ці підприємства, включають вплив погодних умов, коливання цін на ринку, валютні ризики, проблеми з регулюванням та законодавством, а також внутрішні проблеми, пов'язані з управлінням та ресурсами.*

*Управління ризиками в аграрних підприємствах починається з ідентифікації цих ризиків. Важливо провести комплексний аналіз, який охоплює як зовнішні, так і внутрішні фактори, що можуть вплинути на виробництво і фінансову стійкість підприємства. Серед зовнішніх ризиків, погодні умови зазвичай є однією з найсуттєвіших загроз для вирощування ячменю. Економічні ризики, такі як коливання цін на ринку та валютні ризики, також мають велике значення. Урядові політики та регулювання можуть створити додаткові виклики, оскільки вони можуть впливати на цінову динаміку та доступ до ресурсів.*

*This article is devoted to the study of risk management of agricultural enterprises of barley producers in socio-economic systems. The purpose of the study is to determine the main risks faced by agricultural enterprises producing barley, and to consider possible strategies and tools for their management.*

*Risk management in agricultural enterprises specialized in growing barley in socio-economic systems is a critically important component of strategic planning and management to ensure the stability and profitability of these enterprises. Barley, as one of the main crops used in various industries, including the brewing industry and animal feed, faces significant risks that can affect production and profitability. This study examines the key aspects of risk management in agricultural enterprises specializing in the production of barley, with a focus on socio-economic aspects.*

*Agricultural enterprises in Ukraine and in many other countries are in a constant context of changing conditions, which include natural factors, economic fluctuations and social influences. The main risks these businesses face include the effects of weather conditions, market price fluctuations, currency risks, regulatory and legal issues, and internal management and resource issues. Ensuring sustainability and profitability of the agricultural sector is an important task for the economy of many countries, and risk management is a key factor in achieving this goal. Agricultural enterprises must be prepared for various scenarios and have action plans to overcome the negative consequences of risks. Thanks to careful risk analysis and the use of appropriate strategies and tools, agricultural enterprises can ensure their sustainability and successful operation in the conditions of the modern economic environment. Risk management of barley cultivation is important not only for enterprises, but also for ensuring food security and sustainable development of rural regions.*

*Risk management in agricultural enterprises begins with the identification of these risks. It is important to conduct a comprehensive analysis that covers both external and internal factors that can affect the production and financial stability of the enterprise. Among external risks, weather conditions are usually one of the most significant threats to barley cultivation. Economic risks such as market price fluctuations and currency risks are also important. Government policies and regulations can create additional challenges as they can affect price dynamics and access to resources.*

*Ключові слова: ризики, виробники ячменю, аграрні підприємства, соціально-економічні систем, інновації.  
Key words: risks, barley producers, agricultural enterprises, socio-economic systems, innovations.*

## FORMULATION OF THE PROBLEM

Agriculture throughout the world in general and in Ukraine in particular is one of the key branches of the economy that provides the population with food and raw materials for industry. One of the important crops grown on agricultural enterprises is barley. Barley is used for the production of beer, animal food, as well as raw material for the production of cereals, flour and other products. Agricultural enterprises specializing in the cultivation of barley face significant risks that affect their efficiency and profitability. Managing these risks is an important task for agricultural enterprises and is crucial for the sustainable development of the agricultural sector.

Agricultural enterprises in Ukraine and in many other countries are in a constant context of changing conditions, which include natural factors, economic fluctuations and social influences. The main risks these businesses face include the effects of weather conditions, market price fluctuations, currency risks, regulatory and legal issues, and internal management and resource issues. After identifying the risks, agricultural enterprises must assess

these risks, their probability and impact on the enterprise's activities. Risk assessment allows the enterprise to determine which risks are the most significant and require the most attention. For example, if the risk is related to changes in government regulation, it can have a significant impact on the company's activities and require special management.

Development of risk management strategies is the next step in the risk management process of an agricultural enterprise. This includes the definition of specific measures and policies aimed at reducing risks and increasing the sustainability of the enterprise. For example, according to the results of the risk assessment, the enterprise may decide to invest in insurance to reduce financial losses in case of negative events, or increase the diversification of crops grown to spread the risk.

## ANALYSIS OF LATEST RESEARCH PUBLICATIONS

Risk management of agricultural enterprises of barley producers in socio-economic systems was studied by

Ukrainian and foreign authors. This topic is of great interest among researchers and practitioners, and there are many outstanding authors working in this field, including VV Demyanenko; O.M. Kravchenko; Lytvynenko I.S.; I.O. Melnyk; Petrenko O.V.; Peter Drucker — the author of numerous works on management, including the management of socio-economic systems and risks; Philip Kotler — specialist in the field of marketing, author of works on the management of socio-economic systems and risks; Nassim Nicholas Taleb is the author of works on risk and randomness in economy and society.

## SETTING OBJECTIVES

Improving decision-making processes is important in a competitive economy characterized by risks. Barley producers need to enhance their decision-making capabilities by using rigorous analytical methods, considering different scenarios, developing a culture of innovation and promoting continuous learning and professional development of staff. By making informed strategic decisions, agricultural enterprises can better position themselves to thrive in a competitive environment while effectively managing risks. It is necessary to promote sustainable business and corporate social responsibility. Socio-economic systems in a competitive economy must strive for sustainable development, integrating environmental and social aspects into their activities. This includes implementing environmentally friendly practices, promoting diversity, ensuring ethical supply chains and actively participating in community development initiatives. This topic is relevant and dynamic, and researchers are constantly expanding knowledge in this area. The main goal of this study is to study the main risks that arise in the activities of agricultural enterprises specializing in the production of barley, and to develop recommendations for the effective management of these risks in socio-economic systems.

## PRESENTATION OF THE MAIN MATERIAL

In modern economic conditions, where agriculture remains one of the key sectors of the economy, agricultural enterprises face numerous risks that can affect their profitability, stability and development. One of the most important components of modern agriculture is the production of barley, which is used for the production of beer, as fodder for livestock, as well as in the food industry and other industries. Barley is an important crop that is grown at agricultural enterprises of Ukraine, it is widely used and plays an important role in the production of alcoholic beverages, animal feed and food products. However, agricultural enterprises specializing in the cultivation of barley face numerous risks that affect their profitability and competitiveness, the prices of agricultural products can fluctuate due to various factors, such as changes in supply and demand, trade restrictions and exchange rates. In connection with climate changes, market and economic factors, as well as social aspects, risk management for agrarian enterprises of barley producers acquires great importance. Agricultural enterprises must take these factors into account when planning the production and sale of their products [2, 6].

In addition, agricultural enterprises face risks associated with changes in legislation and regulation of agriculture. Changes in tax legislation, subsidy rules and other aspects of regulation can affect the financial stability of enterprises. The importance of risk management for agricultural enterprises of barley producers is related to 4 main groups of risks:

1. Climate change and natural risks are one of the main challenges for agriculture. Unpredictable weather conditions, including droughts, floods, hail and other natural disasters, can significantly undermine barley yields. Managing these natural risks includes developing climate change adaptation plans, using technology to monitor weather conditions, and implementing production practices that reduce vulnerability to weather fluctuations.

2. Market risks — market factors, such as changes in barley prices, market conditions and economic crises, can significantly affect the profitability of agricultural enterprises. Barley producers must be prepared for sudden changes in the market and develop sales and marketing strategies to ensure sustainable sales of their products.

3. Economic risks, such as changes in exchange rates, inflation and interest rates, can affect the cost of production and financial stability of agricultural enterprises. The management of these risks includes financial planning, the development of reserves and the conclusion of financial agreements to protect against currency fluctuations.

4. Social risks, which agricultural enterprises must also take into account in the process of risk management. This includes community relations, employee rights, compliance with legislation and environmental standards. Regardless of the risks that exist, compliance with ethical and social standards is a key aspect of the sustainable development of agricultural enterprises.

Risk management strategies for agricultural enterprises of barley producers [5]:

1. Diversification of cultivated crops. One of the ways to reduce risks for agricultural enterprises is to expand the range of cultivated crops. Diversified farming activities can reduce the impact of weather factors and market fluctuations on profitability. Growing several types of agricultural products can provide an enterprise with greater resilience to risks.

2. Use of technologies and innovations. Modern technologies, such as agricultural robots, automation and monitoring systems, can help agricultural enterprises manage risks more effectively. For example, automatic irrigation systems can reduce the impact of drought, and modern data processing techniques can help respond to weather anomalies in a timely manner.

3. Insurance and financial protection. Insurance is an important tool for protection against natural and economic risks. Agricultural enterprises can take out insurance policies covering losses from drought, flood, hail and other natural disasters. In addition, they can use financial instruments such as forward contracts and options to hedge against market fluctuations.

4. Production planning and inventory management. Effective production planning and inventory management can help agricultural enterprises manage risks. Development of an annual plan for production and inventory management helps to determine the needs for resources

and materials for the future, which allows the enterprise to better prepare for possible risks.

5. Interaction with government and public organizations. Government and public organizations can provide support to agricultural enterprises in risk management. For example, government programs can provide financial assistance in the event of losses from natural disasters, and community organizations can promote the development of environmentally sound practices.

Risk management is an important component of the successful functioning of agricultural enterprises, especially barley producers, since agriculture is exposed to various natural, economic and social risks. For effective risk management in agricultural enterprises, it is important to consider socio-economic aspects [3, 9].

The main stages of risk management for agricultural enterprises of barley producers in socio-economic systems include:

1. Risk analysis (the first step) is the identification of all possible risks that may affect the activity of an agricultural enterprise. These can be natural risks (weather conditions, pests), economic risks (changes in barley prices, currency fluctuations), and social risks (changes in legislation, problems with employees, etc.).

2. Risk assessment — after identifying the risks, it is necessary to assess their impact on the enterprise and the probability of their occurrence. It is important to determine which risks are the most significant and require the most attention.

3. Development of risk management strategies — after assessing the risks, it is necessary to develop strategies for their management. This may include the creation of reserves, the conclusion of insurance agreements, the diversification of cultivated crops, production planning and other measures.

4. Implementation and monitoring — after developing strategies, it is important to implement them and constantly monitor the situation. It is important to respond in time to changes in risks and adjust management strategies according to the situation.

5. Involvement of specialists — risk management may require specialized knowledge and skills. Therefore, it is important to involve specialists in the fields of finance, insurance, agriculture, etc. for optimal risk management.

6. Community Involvement — As agricultural enterprises often have a significant social impact on the local community, it is also important to consider the interests and needs of these communities in the risk management process.

Risk management is an integral part of the strategic management of agricultural enterprises, and taking into account socio-economic aspects will help increase the stability and success of their activities in changing conditions.

Effective risk management is critical to ensuring the stability and resilience of socio-economic systems. It covers the identification, assessment and mitigation of risks that may affect various aspects of society, including economic, social and environmental dimensions. As the world becomes increasingly interconnected and complex, it is important to constantly refine and improve

approaches to risk management. Some key directions for improving risk management in socio-economic systems are proposed:

**Integrated approach:** Adopting an integrated approach to risk management is essential. This involves taking into account the interrelationship and interdependence of various risks and their potential cascading effects. By examining risks holistically, decision makers can gain a comprehensive understanding of potential impacts and develop more effective mitigation strategies.

**Early warning systems:** The development of robust early warning systems is critical to timely detection and response to emerging risks. These systems must use data, analytics and advanced technology to identify potential risk signals. By identifying risks at an early stage, stakeholders can take proactive measures to prevent or minimize their impact.

**Scenario analysis and stress testing:** Conducting scenario analysis and stress testing can enhance risk assessment capabilities. By modeling different scenarios and stressors, decision makers can assess the vulnerability and resilience of socio-economic systems. This allows them to identify potential vulnerabilities and implement appropriate risk mitigation strategies.

**Improving data collection and analysis:** Effective risk management relies on quality and up-to-date data. Governments, organizations and research institutions should invest in improving data collection methods and technologies. In addition, advanced data analysis techniques, such as artificial intelligence and machine learning, can help identify patterns, trends, and potential risks from vast amounts of data [5, 15].

**Stakeholder engagement and collaboration:** Risk management is a shared responsibility that requires collaboration between various stakeholders, including governments, businesses, communities and individuals. Involving stakeholders in the risk management process improves information sharing, coordination and collective decision-making. It also helps to consider the perspectives and needs of different stakeholders, leading to more comprehensive risk management strategies.

**Building resilience:** Investments in building resilience at the individual, community and system levels are critical to effective risk management. This includes increasing the capacity of socio-economic systems to absorb and recover from shocks and stresses. Measures may include diversifying economic activity, promoting the development of social safety nets, investing in infrastructure sustainability, and creating adaptive governance structures.

**Continuous monitoring and evaluation:** Risk management should be a cyclical process that involves continuous monitoring and evaluation. Regular assessments help monitor the effectiveness of risk reduction measures and identify areas for improvement. By integrating feedback and learning mechanisms, decision makers can adapt their strategies based on new knowledge and the changing risk landscape [4, 8].

**Education and awareness:** Increasing risk literacy and public awareness are essential to building a culture of risk management. Educating people about risks, their potential

consequences and the role they can play in risk reduction empowers communities and encourages proactive risk management behavior. This can be achieved through formal education, public campaigns and targeted information programs.

By implementing these areas of risk management improvement, societies can improve their ability to anticipate, respond to, and recover from various risks and uncertainties. A proactive and holistic approach to risk management is essential to creating sustainable socio-economic systems that can thrive in an increasingly complex and interconnected world.

In fig. 1 shows a block diagram of the use of innovative and sustainable business models at agricultural enterprises in the context of digitalization.

The rating of favorable conditions for doing business in Ukraine includes several key components that are evaluated to determine the general state of the business environment in the country. These components provide insight into various aspects of the regulatory framework, infrastructure, market conditions, and other factors affecting business and investment climate.

These components are usually assessed through surveys, interviews and analysis conducted by rating agencies, international organizations and research institutions. They provide a comprehensive picture of the business environment and help identify areas that need improvement to increase the attractiveness of Ukraine as a country for doing business and investing [13].

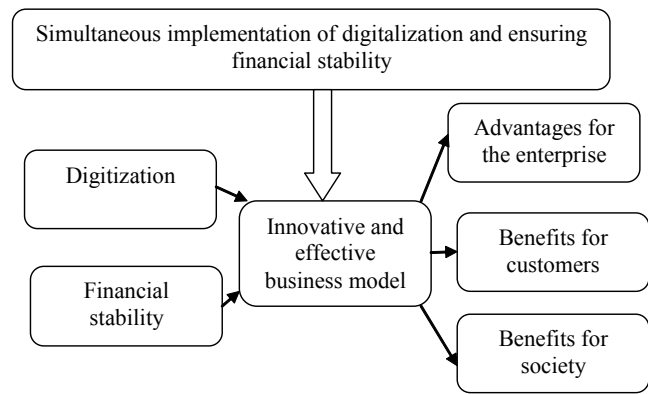
When making investments, an agricultural enterprise in asset management combines equity and debt capital, and then distributes it. If the financial strategy of the agricultural enterprise is effective, then asset management will contribute to the real growth of the enterprise.

Improving risk management in agricultural enterprises is crucial to ensure the long-term sustainability and profitability of agricultural activities [11]. The agricultural sector is inherently exposed to various risks, including weather fluctuations, market volatility, pests and diseases, and regulatory changes. Implementing effective risk management strategies can help farmers reduce these risks and make informed decisions to protect their business. Here are some directions for improving risk management at agricultural enterprises:

1. Risk assessment and planning: A comprehensive risk assessment is required to identify and understand the specific risks facing the agricultural enterprise. This should include an assessment of the likelihood and potential impact of each risk. Developing a risk management plan that outlines the strategies and actions to be taken to mitigate and effectively manage these risks.

2. Diversification of agricultural activities to spread risks among different crops or animals. By growing a variety of crops or breeding several species of animals, it is possible to reduce the impact of one risk event on the business as a whole. Diversification can also help manage market volatility by using different markets or value chains.

3. Insurance coverage: consideration of the possibility of investing in insurance protection adapted to the specific risks faced by the agricultural enterprise. Crop, livestock



**Fig. 1 Flow chart of the use of innovative and sustainable business models at agricultural enterprises in the context of digitalization**

and income protection insurance are among the most common options. Insurance can provide financial protection in the event of crop failure, livestock loss or other unforeseen events, reducing the financial impact on a business.

4. Using technology and data to improve risk management. Weather forecasting systems, remote sensing technologies and farm management software can provide valuable information about weather conditions, crop conditions and market trends. Analyzing and using this information can help you make more informed decisions, optimize resource allocation, and minimize risk.

5. Collaborative Relationships: Developing collaborative relationships with other farmers, industry experts and stakeholders. Sharing knowledge and experience can help identify innovative risk management strategies and provide a support network in challenging times. Participation in farmer networks, industry associations and local cooperatives can facilitate information sharing and collective action to manage shared risks.

6. Continuous learning and adaptation: keep abreast of the latest research, best practices and emerging trends in risk management in agriculture. Attending seminars, conferences and training programs to improve knowledge and skills. Regularly evaluate and update risk management strategies based on new information and changing circumstances.

7. Financial analysis and planning: conducting regular financial analysis to assess the profitability and financial condition of the agricultural enterprise. Developing a sound financial plan that includes budgeting, cash flow projections, and contingency plans. This will help predict potential risks and make informed decisions to minimize financial vulnerability.

8. Government support and programs: study of government support programs, subsidies and risk management tools available to agricultural enterprises. Many governments provide assistance in the form of grants, loans and insurance schemes to help farmers manage risks effectively.

9. Environmental management: implementing sustainable agricultural practices that minimize environmental risks and promote long-term sustainability. Implementation of soil conservation methods, water resources mana-

gement strategies and integrated pest control systems. Taking proactive measures to protect the environment can reduce the likelihood of environmental risks and potential regulatory issues.

Constant monitoring and evaluation of the effectiveness of risk management strategies, regular review and updating of the risk management plan based on the indicators and results of implemented measures. By following these guidelines and implementing effective risk management practices, agricultural businesses can increase their resilience, reduce vulnerability to risk, and ensure long-term success in an unpredictable operating environment.

By implementing sound risk management strategies, society can better prepare for and mitigate potential risks, whether they are related to economic fluctuations, social unrest, natural disasters or technological failures. Identifying, assessing and proactively managing risks allows you to make more informed decisions, contribute to increasing resilience and minimizing negative consequences for people, businesses and communities.

The use of technological advances and data-driven approaches can significantly improve risk management in socio-economic systems. The use of the latest technologies, such as artificial intelligence, machine learning and big data analysis, makes it possible to better assess, predict and monitor risks. These tools can help identify patterns, identify new risks, and support evidence-based decision-making. However, it is important to ensure that ethical considerations, privacy safeguards and sound governance are in place to maximize the benefits of technology while minimizing potential risks and unintended consequences.

## CONCLUSIONS

Risk management for agricultural enterprises of barley producers is an integral part of their management strategy. Ensuring sustainable development requires careful analysis, assessment and management of various types of risks, including natural, market, economic and social. The use of various strategies, such as diversification of cultivated crops, use of modern technologies, insurance and cooperation with government and public organizations, can help reduce risks and ensure the sustainability and profitability of agricultural enterprises. Risk management is a key component of the successful operation of agricultural enterprises in the modern economic environment.

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