УДК: 338.43 **doi: 10.20998/2313-8890.2025.07.12**

Vdovenko Nataliia, Doctor of Sciences in Economics, Professor, Head of the Department of Global Economy, ORCID ID: 0000-0003-0849-057X
National University of Life and Environmental Sciences of Ukraine
15 Heroes of Defense St., Kyiv, 03041, Ukraine
Kalinichenko Sergiy, Candidate of Science in Economics, Associate Professor, Deputy of the General Director for International Cooperation, Innovations, and Development, ORCID ID: 0000-0003-3958-4763
The State Non-Profit Enterprise Testing Board, the Ministry of Public Health of Ukraine
31 Hertsen St., Kyiv, 04050, Ukraine,
Cherednyk Anna, Candidate of Science in Economics, Associate Professor, Associate Professor of the Enterprise Economics and Business Organization Department, ORCID ID: 0009-0003-6471-0677
Simon Kuznets Kharkiv National University of Economics
9a Nauky Avenue, Kharkiv, Ukraine
Matieiev Pavlo, Doctor of Sciences in Economics, Associate Professor, Leading Researcher of Economics, Management, and Innovation Transfer in Liveswtock Farming, ORCID ID: 0000-0003-0194-6909
Livestock Farming Institute of National Academy of Agrarian Sciences of Ukraine
1-A, Tvarynnykyv Street, Kharkiv, Kharkiv region, 61026 (Kulynichi)
Makieiev Oleksandr, Candidate of Science in Economics, Senior Researcher of Economics, Management and Innovation Transfer in Liveswtock Farming, ORCID ID: 0009-0000-2300-933X
Livestock Farming Institute of National Academy of Agrarian Sciences of Ukraine
1-A, Tvarynnykyv Street, Kharkiv, Kharkiv region, 61026 (Kulynichi)

FORMATION OF AN ADAPTIVE STRATEGY OF GRAIN PRODUCERS BASED ON FINANCIAL CONTROLLING IN THE VUCA ENVIRONMENT

Abstract. *The article examines the functioning of agricultural enterprises in the VUCA environment. The relevance of the research topic is due to the growing turbulence of the external environment, the increasing influence of factors of variability, uncertainty, complexity and ambiguity on the activities of agricultural enterprises, as well as the need to form flexible management decisions capable of ensuring the sustainability, competitiveness and strategic adaptability of grain producing enterprises in the conditions of modern economic and geopolitical challenges. The research aims to substantiate theoretical aspects and provide practical recommendations for developing adaptive strategies for managing enterprises through financial control in the VUCA environment.*

The study showed that the Ukrainian VUCA environment has specific features that have a particularly acute impact on the functioning of grain producers. Among the main factors are military threats, logistical constraints, volatility in global markets, climate change, instability in domestic politics, and a high level of information turbulence. The combination of these factors underscores the need to develop adaptive management strategies to increase the stability of production systems and ensure their effective operation in unpredictable conditions.

It is substantiated that adaptive strategies are not merely a tool for management optimization but a fundamental mechanism for the long-term development of enterprises in VUCA realities. They should

consider strategic sensitivity, flexible resource management, coherence of strategic goals, and the ability to implement changes quickly. Implementing such strategies will minimize the negative impact of external shocks, increase economic stability, and create new competitive advantages.
The proposed integration of financial controlling into the management system of agro-industrial enterprises in the VUCA environment enhances their ability to quickly adapt to changing market conditions, thereby increasing economic stability and strengthening competitive positions. Automation of control procedures, the use of digital analytical platforms, modeling of financial risks, and the use of forecast planning form a toolkit for enterprises to respond promptly to external fluctuations and high uncertainty. In this context, integrated financial controlling performs internal monitoring and ensures transparency in management decisions, which is a key condition for the formation of an efficient and open grain market amid digital transformation and increased systemic challenges.
Keywords: *adaptive strategies, controlling, uncertainty, VUCA environment, grain market, grain producers, risk.*

Чередник Анна Олегівна, кандидат економічних наук, викладач кафедри економіки підприємства та організації бізнесу, ORCID ID: 0009-0003-6471-0677
Харківський національний економічний університет імені Семена Кузнеця
пр. Науки 9а, м. Харків, Україна
Вдовенко Наталія Михайлівна, доктор економічних наук, професор, завідувач кафедри глобальної економіки, ORCID ID: 0000-0003-0849-057X
Національний університет біоресурсів і природокористування України
вул. Героїв Оборони, 15, Київ, 03041, Україна
Калініченко Сергій Миколайович, кандидат економічних наук, доцент, заступник генерального директора з міжнародного співробітництва, інновацій та розвитку ORCID ID: 0000-0003-3958-4763
ДНП «Центр Тестування» МОЗ України
вул. Герцена, 31, м. Київ, 04050, Україна
Матвєєв Павло Миколайович, доктор економічних наук, доцент, провідний науковий співробітник відділу економіки, менеджменту та трансферу інновацій в тваринництві, ORCID ID: 0000-0003-0194-6909
Інститут тваринництва Національної академії аграрних наук України
вул. Тваринників, 1-А, м. Харків, Харківська область, 61026 (Кулиничі)
Макєєв Олександр Олексійович, кандидат економічних наук, старший науковий співробітник відділу економіки, менеджменту та трансферу інновацій в тваринництві, ORCID ID: 0009-0000-2300-933X
Інститут тваринництва Національної академії аграрних наук України
вул. Тваринників, 1-А, м. Харків, Харківська область, 61026 (Кулиничі)

ФОРМУВАННЯ АДАПТИВНОЇ СТРАТЕГІЇ ПІДПРИЄМСТВ-ВИРОБНИКІВ ЗЕРНА НА ЗАСАДАХ ФІНАНСОВОГО КОНТРОЛІНГУ В УМОВАХ VUCA-СЕРЕДОВИЩА

Анотація. *Статтю присвячено аспектам функціонування аграрних підприємств в умовах VUCA-середовища. Актуальність тематики дослідження обумовлена зростаючою турбулентністю зовнішнього середовища, посиленням впливу чинників мінливості, невизначеності, складності та неоднозначності на діяльність аграрних підприємств, а також необхідністю формування гнучких управлінських рішень, здатних забезпечити стійкість,*

конкурентоспроможність і стратегічну адаптивність підприємств-виробників зерна в умовах сучасних економічних та геополітичних викликів. Дослідження на меті обґрунтувати теоретичні аспекти та практичні рекомендації щодо формування адаптивних стратегій управління підприємствами на засадах фінансового контролінгу в умовах VUCA-середовища.
Дослідження показало, що українське VUCA-середовище має специфічні риси, котрі особливо гостро впливають на функціонування підприємств-виробників зерна. Серед основних чинників виокремлено: воєнні загрози, логістичні обмеження, волатильність світових ринків, кліматичні трансформації, нестабільність внутрішньої політики та високий рівень інформаційної турбулентності. Сукупність цих факторів актуалізує необхідність розроблення адаптивних стратегій управління, спрямованих на підвищення стійкості виробничих систем та забезпечення їх здатності ефективно функціонувати у непередбачуваних умовах.
Обґрунтовано, що адаптивні стратегії це не просто інструмент управлінської оптимізації, а базовий механізм довгострокового розвитку підприємств у VUCA-реаліях. Вони мають враховувати стратегічну чутливість, гнучке управління ресурсами, узгодженість стратегічних цілей та здатність до швидкого втілення змін. Реалізація таких стратегій забезпечить мінімізацію негативного впливу зовнішніх шоків, підвищення рівня економічної стійкості та формування нових конкурентних переваг.
Запропонована інтеграція фінансового контролінгу в систему управління агропромисловими підприємствами в умовах VUCA-середовища підсилює їхню здатність швидко адаптуватися до мінливих параметрів ринку зерна, забезпечуючи підвищення економічної стійкості та зміцнення конкурентних позицій. Автоматизація контролінгових процедур, застосування цифрових аналітичних платформ, моделювання фінансових ризиків і використання прогнозного планування формують інструментарій для оперативного реагування підприємств на зовнішні коливання та високу невизначеність. Інтегрований фінансовий контролінг у цьому контексті виконує функції внутрішнього моніторингу та гарантує прозорість управлінських рішень, що є ключовою умовою формування ефективного й відкритого ринку зерна в умовах цифрової трансформації та посилення системних викликів.
Ключові слова: *адаптивні стратегії, контролінг, невизначеність, VUCA-середовище, ринок зерна, підприємства-виробники зерна, ризик*

Problem statement. Rapid changes in market conditions, unpredictable price fluctuations, complex logistics links, growing climate risks, evolving regulatory requirements, and increased competitive pressure characterize the so-called VUCA environment. Do not provide enterprises with sufficient opportunities to adapt promptly to dynamic changes.

Grain producers, like all other agricultural enterprises, face the need to simultaneously respond to short-term market fluctuations and develop long-term strategic development guidelines. The high dependence of their effectiveness on natural and climatic conditions, the limited resource base, and the complexity of forecasting yields and price dynamics heighten enterprises' strategic vulnerability. In addition, climate change, instability in global food markets, disruptions to international supply chains, and geopolitical risks create an additional level of uncertainty that requires a rethink of existing governance models. Under these conditions, the need for an adaptive

strategy that provides agricultural enterprises with flexibility, sustainability, and the ability to transform their production and management processes quickly is evident.

Analysis of recent research and publications. In modern scientific discourse, the concept of VUCA is widely studied by scientists to analyze transformations in the business environment and to construct adaptive management models, including those based on control. The study by T. Büttner [1] highlights the evolution of the VUCA concept and its significance for shaping organizational behavior in conditions of high volatility and turbulence. The ideas laid down by W. Bennis and B. Nanus [2] address the need to change leadership approaches in situations of uncertainty. Contributions of N. Bennett and J. Lemoyne [3] to the development of the analyzed concept include systematizing threats and determining managerial responses for each component. The contribution of O. Mak and co-authors [4], who substantiated the idea of proactive strategic management and outlined the directions for enterprises' responses to variability, uncertainty, complexity, and ambiguity, is significant. Studies devoted to the nuances of agricultural business in conditions of increased instability significantly complement the general theoretical basis. V. Orlov [5] defined the role of adaptive formation of the resource potential of agricultural enterprises. The works of O. Ilyashenko and O. Fisenko [6] outline a range of risks characteristic of an unstable business environment, which directly affect the safety activities of agricultural producers. Scientists A. Todoshchuk and co-authors [7] investigated the practical aspects of management in the VUCA world and identified tools for overcoming uncertainty. O. Tsyplitska and O. Deineko [11] investigated adaptive strategic planning in the context of global turbulence. K. Maistrenko and O. Bilyk [12] analyzed the mechanisms of strategic adaptation in management – the works of A. Korbutyak [13], N. Sokrovolska [13], and Y. Nikitiuk [14] are devoted to the study of modern controlling tools in conditions of limited resources.

The purpose of the study is to theoretically substantiate and develop practical approaches to the formation and implementation of adaptive strategies for managing enterprises based on financial control in the VUCA environment.

Presentation of the main results of the study. Today, economic processes across all countries operate in conditions of increased turbulence, unpredictability, and multidimensionality, necessitating a rethinking of classical management methods at all levels. In this context, the concept of VUCA is crucial, reflecting the specifics of the environment in which organizations are forced to act, responding to rapid, often nonlinear changes.

In general, VUCA serves as an analytical framework for the modern socio-economic and entrepreneurial space. This concept has radically changed the direction and logic of strategic planning, management approaches, forecasting, and organizational development, necessitating a detailed study of its origins. For the first time, the term "VUCA" appeared in the literature at the end of the 20th century in the field of military strategic analysis to characterize the transition period from a unidirectional to a multilateral model of the global order, which caused an increase in geopolitical uncertainty and the complexity of international interactions [1]. Further development of the concept was reflected in G. Barber's 1991 work, which highlighted the application of VUCA approaches to strategic leadership considering the new configuration of global development. The conceptual foundations of the approach are primarily based on the research of W. Bennis and B. Nunus [2], who were among the first to outline the characteristic features of leadership in conditions of variability, uncertainty, complexity, and ambiguity.

At the beginning of the XXI century, the term under study rapidly spread among the scientific community as a tool for analysing transformations in the business environment, marked by high instability and information complexity. At the same time, the interpretation of the concept of "VUCA" in the scientific discourse remains heterogeneous. Scientists N. Bennett and G. Lemoyne [3] noted that each component of such an environment requires specific management responses: variability requires rapid adaptation and flexible solutions; uncertainty requires a systematic analysis and development of a scenario approach; complexity requires interdisciplinary integration of technological and knowledge resources; ambiguity requires innovation and strategic flexibility (Table 1).

Table 1 – Components of the VUCA environment and related management responses

VUCA Component	Characteristic	Main threats	Necessary management actions	Expected result
Volatility	Rapid and abrupt changes in the external environment	Resource instability, market fluctuations, unpredictable events	Prompt adaptation, fast and flexible management decisions	Increased resilience and ability to react quickly
Uncertainty	Lack of information to predict future events	Risks of erroneous decisions, planning difficulties	System analysis, development of scenario forecasting	Reducing information risks and improving the validity of decisions
Complexity	Many interrelated factors	Inconsistency of traditional management models, information overload	Interdisciplinary integration of knowledge and technology	Optimise decision-making in challenging environments
Ambiguity	Vagueness of cause-and-effect relationships, lack of unambiguous interpretations	High risk of erroneous management conclusions	Development of innovative thinking, strategic flexibility	Increasing the ability to transform and find new solutions

Source: compiled by [3]

According to researchers [3], the development of scenario thinking, the institutionalization of organizational learning, and the development of dynamic competencies are becoming fundamental factors in enhancing the enterprise's adaptability in VUCA realities.

In addition, as noted by researchers O. Mak and co-authors [4], modern challenges associated with variability, uncertainty, complexity, and ambiguity necessitate the introduction of proactive management models. Scientists distinguish four areas of strategic response:

1. Strategic sensitivity, which involves constant scanning of the external environment, timely identification of potential opportunities and threats, as well as the use of scenario forecasting; the implementation of this direction allows the enterprise to reduce time lags in decision-making and increase the effectiveness of strategic response;

2. Flexible resource management, which focuses on the need for dynamic restructuring of the resource base in accordance with changes in market demand, technological development, and logistics conditions. This ensures a prompt response to market fluctuations and helps to reduce the risks associated with supply chain disruptions;

3. Coherence of goals, which consists in the formation of a single vision of strategic guidelines among all employees, its implementation contributes to the strengthening of internal organizational unity, synchronization of actions of different departments, and increases the efficiency of strategic tasks;

4. Rapid implementation of changes, which involves accelerated decision-making, modernization, and adaptation of internal business processes to new conditions; this allows you to increase operational flexibility, reduce excessive bureaucratization, and ensure rapid adaptation of the enterprise to the dynamics of the VUCA environment.

In their totality, these directions form the basis for the enterprise's strategic adaptability, contributing to its stability and its ability to function effectively in conditions of high turbulence and uncertainty.

In Ukraine, the VUCA environment has specific features that are particularly noticeable for the agricultural sector, particularly for grain producers. The combination of global challenges and internal transformations creates significantly changing conditions for their functioning, as confirmed by modern scientific research [5-8]. In the domestic agricultural sector, the manifestations of VUCA are becoming increasingly acute due to a combination of war risks, market instability, logistical constraints, changing climatic conditions, and high volatility in global grain markets. All this forms an unpredictable environment that significantly affects production cycles, economic stability, and strategic prospects of grain producers (Fig. 1).

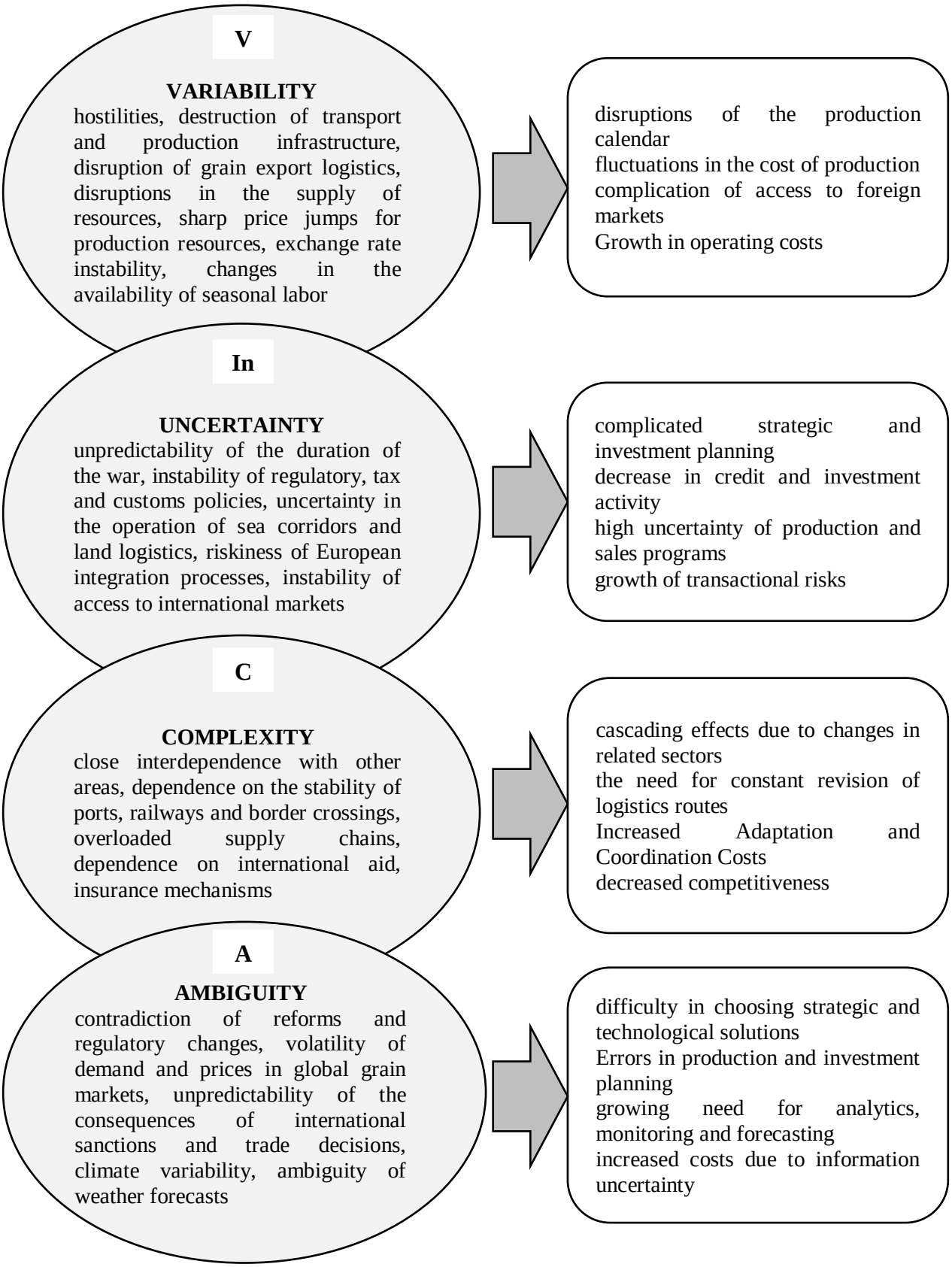

Figure 1 – Manifestations of the VUCA environment in Ukraine in the activities of grain producers

Source: improved by the author

In a VUCA environment, agricultural producers must continually improve their business models. Scientists [9-12] note that the development of adaptive management strategies is not just a tool for improving management, but a decisive factor in ensuring economic sustainability, efficiency, and long-term growth of enterprises in the VUCA environment. Unlike traditional strategic models focused on a relatively stable, predictable environment, adaptive strategies assume constant change that requires dynamic management decisions, rapid business model restructuring, and the formation of sustainable structures capable of self-regulation.

Adaptive strategies are based on the principle of strategic sensitivity, which involves constant monitoring of the external environment, early detection of signals of change, and the ability to transform these signals into practical management decisions. This leads to the development of business intelligence systems, the improvement of analytical approaches, and the use of scenario forecasting to generate multiple action options based on possible event trajectories.

To adapt to the conditions of an uncertain environment, it is necessary to ensure the flexibility of resource management, that is, the enterprise's ability to redistribute material, financial, and labor resources quickly and to restructure production processes in response to changes in market conditions. In a VUCA environment, such flexibility will help minimize losses from external shocks and optimize the cost structure.

Under conditions of uncertainty and information noise, it is essential to foster a unified vision of the enterprise's development among all its participants, thereby ensuring coordination of actions, reducing strategic mistakes, and increasing organizational cohesion. Internal adaptability is achieved through staff training, the development of decision-making autonomy, and the application of team models.

The transition from hierarchical, bureaucratized management systems to decentralized, process-oriented models will accelerate decision-making and improve the efficiency of responses to external challenges. The flexibility of business processes, the digitalization of operations, and the introduction of modern risk management tools will form the basis for such a transformation.

Adaptive management strategies in a VUCA environment combine flexibility, innovation, strategic sensitivity, and the ability to quickly transform organizational and production processes. They will provide the enterprise with both survival in conditions of instability and the creation of new competitive advantages, increased efficiency, and the possibility of sustainable long-term development.

Along with the formation of adaptive strategies for enterprise management in general, the problems of rational and effective management of enterprises' financial resources in the grain subcomplex in the VUCA environment are of particular importance. Here, we believe financial control is a powerful tool for supporting the sustainable development of the grain sector, combining analytical support, planning, monitoring, cost control, and risk assessment. The introduction of financial control elements into the adaptability management system of agro-industrial enterprises in the VUCA environment strengthens their ability to respond to economic fluctuations, ensures more efficient resource use, and increases the effectiveness of grain market formation.

The implementation of control in the management systems of agro-industrial enterprises in the VUCA environment is significant for increasing their adaptability to changing market and operational conditions. Ensuring such adaptability involves the use of several complementary areas of controlling.

Strategic controlling includes assessing external opportunities and threats, analysing the competitive environment, and establishing flexible financial guidelines that enable the enterprise to respond quickly to changes in grain market conditions. Operational controlling provides adaptation of current processes - from budgeting and cost control in grain production and storage to optimization of logistics and export operations. Investment control focuses on justifying decisions on equipment renewal, the introduction of digital technologies, and the modernization of infrastructure facilities, considering their ability to increase the enterprise's flexibility and sustainability. Risk controlling is a key mechanism for managing adaptability, as it involves constant monitoring of currency, logistics, market, and credit risks, including grain price volatility and changes in global trading conditions.

The use of financial control creates conditions for transparent decision-making, increases forecasting accuracy, and contributes to a more rational allocation of resources in a rapidly changing market environment. One of the important vectors of controlling is the digitalization of land resources and cadastral data, which provides access to up-to-date information on land plots, confirmation of ownership rights, and coordination of cadastral and registration data. For financial controlling, this means the possibility of correctly determining lease obligations, identifying land assets with a higher level of risk, and more accurately forecasting the efficiency of land fund use.

Transparent management of export flows through digital logistics systems enables you to create an integrated platform for tracking the movement of agricultural products, standardize information on export batches and logistics costs, and ensure control at every stage of grain passage to final destinations. This minimizes information gaps between producers, traders, and state regulators and enhances the adaptability of agricultural enterprises in the digital economy.

Table 1 – Digital Controlling Tools in the Context of Ensuring the Adaptability of Grain Producers in the VUCA Environment

Tool	Essence	Advantages	Disadvantages
ERP systems	Comprehensive automation of processes, cost management, accounting for operations, formation of financial statements, resource control	Increasing the transparency of financial flows; Cost reduction through optimization; A single database for all departments; Acceleration of managerial decision-making; Adaptability support through fast deviation analysis	High cost of implementation and maintenance; The need for staff training; Risk of incompatibility with other systems; The complexity of adaptation to seasonal cycles and the specifics of agricultural production
AgriTech platforms	Crop monitoring, soil analysis, yield forecasting, satellite analytics, and agricultural technology control	Reduction of production and resource costs; Improving the accuracy of yield forecasts; Optimization of fertilizer application rates and plant protection products; Increasing resilience to climate risks; Support for adaptive solutions in real-time	High price of sensors, drones, satellite services; Unstable internet coverage in rural areas; The need for digital skills of staff; Limited accuracy of forecasts in non-standard weather years

End of Table 1

Tool	Essence	Advantages	Disadvantages
Analytics Tools, Big Data	Processing of large data sets, analysis of prices, logistics, market, costs; Building adaptation models	Improving the accuracy of financial planning; Forecasting market fluctuations; Optimization of logistics routes; Ability to simulate adaptability scenarios	Dependence on the quality of the initial data; The need for a complex technical infrastructure; Cybersecurity risks; The need for constant updating of models
Digital platforms for the functioning of the grain market	Online monitoring of prices, exchange quotes, supply, and demand; access to marketplaces	Ensuring price transparency; Access to more lucrative contracts; Quick response to changes in the conjuncture; Supporting the adaptability of export operations	Risk of market manipulation; High dependence on data reliability; Lack of integration between platforms; Possible barriers for small producers
Risk Management Systems	Identification, modelling, and assessment of financial, production, logistics, currency, and market risks	Increasing the sustainability of business processes; Risk scenario analytics; Reduction of losses from price volatility and logistical disruptions; Data-Driven Adaptive Decision-Making	The need for qualified specialists; The presence of a significant number of variables that are difficult to predict (weather, geopolitics); May give false signals when historical data is scarce
Land Cadastre Digitalization Systems	Electronic integration of cadastral, registration, and geospatial data	Accurate calculation of rental payments; Reducing risks in relation to land assets; Simplification of legal verification of land; Higher level of predictability of land transactions	Long process of digitalization in Ukraine; Incomplete or outdated data in registers; The need for high compatibility with other information systems
Digital logistics and grain tracking systems	Grain movement monitoring, batch tracking, cost, and route control	Reduction of logistical risks; Transparency of export operations; Reduction of transportation time; Quality control and accounting at every stage of the route	The need for integration with international logistics networks; Possibility of system failure during peak export periods; High cost of hardware and software solutions

Source: compiled by [13, 14]

In summary, digital platforms for transporting grain batches enable tracking each unit of production in real time and controlling its quality characteristics through digital passports that record parameters (humidity, protein content, class, etc.). This significantly strengthens the tools of production and logistics controlling in the VUCA

environment, which is critically important for increasing the adaptability of enterprises in changing market conditions and unstable supply chains.

The introduction of electronic audit, digital registers, and electronic document management systems creates an integrated information environment that increases the reliability of financial data, ensures consistency between accounting and management accounting, fixes the digital footprint of all transactions, and provides unified data access for business and government agencies. In the future, such instruments will form the basis for a more flexible and adaptive financial controlling system capable of quickly responding to external changes and risks.

The formation of an effective grain market in the VUCA environment is primarily determined by the level of state regulation, in particular in the areas of digitalization of the land cadastre and key state registers, the development of digitalized logistics routes, the expansion of agricultural risk insurance systems, the improvement of software support tools for producers and the increase in the transparency of export operations through the introduction of digital audit. To ensure adaptive financial controlling, it is necessary to create a high-quality state information and analytical environment.

The tool for assessing the adaptability of the controlling system in a VUCA environment is considered an integral indicator of the effectiveness of financial controlling in the functioning of the grain market (*IFC*). It covers key components of control, such as economic stability, risk levels, the degree of digitalization of business processes, operational efficiency, and the enterprise's market activity. Using weight coefficients determined by experts or by the hierarchy analysis method, the total weight is 1. The calculated integral index will determine the degree of implementation of controlling tools in the enterprise management system and assess its ability to respond promptly and adapt to new economic challenges (Table 2). The index is calculated according to the formula:

$$IFC = w_1 \cdot FS + w_2 \cdot RE + w_3 \cdot DE + w_4 \cdot OE + w_5 \cdot MA,$$

where FS is the index of financial stability of the enterprise, which includes the ratio of autonomy, coverage, liquidity, and capital structure;

RE – risk load index assesses currency, logistics, market, and credit risks;

DE – Digital Process Efficiency Index, where controlling reflects the level of implementation of digital platforms, electronic audit, automation;

OE – operational efficiency index, which includes production cost, resource productivity, and efficiency of elevator logistics;

MA – index of market activity, reflecting the profitability of trading operations, export activity, and price competitiveness;

w1… w5w_1 … w_5 – weight coefficients of importance determined by the expert method or the method of hierarchy analysis.

Table 2 - Initial data for the calculation of the integral indicator of financial controlling of an agro-industrial enterprise in the process of functioning of the grain market in the conditions of the VUCA environment

Showman	Denomination	Meaning
Financial stability	FS	0,78
Risk load	RE	0,55
Digitalization efficiency	OF	0,70
Operational efficiency	OE	0,62
Market activity	BUT	0,66
Weights		
Financial stability	FS	0,30
Risk load	RE	0,25
Digitalization efficiency	OF	0,20
Operational efficiency	OE	0,15

Source: calculated by the author

It should be noted that the obtained integral indicator yielded a value of Ifc = 0.6705, corresponding to the average level of financial control implementation in the enterprise management system and indicating a *moderate ability to adapt to changes in the economic environment.*

The results obtained show that the existing controlling system generally performs its functions. Still, it requires further strengthening of digital tools, improvements in risk management approaches, and optimization of operational activities. The gradual strengthening of these components will ensure greater adaptability of the agro-industrial

enterprise to fluctuations in the grain market, which is critically important in the context of digital transformation and growing economic challenges.

In view of this, the practical implementation of control approaches at grain enterprises in the VUCA environment involves establishing internal centres of financial responsibility, deploying budgeting systems, developing a financial risk map, and using digital modelling tools. Additionally, it is crucial to manage grain product costs, assess the effectiveness of trading operations, apply control factors across production, logistics, and sales processes, and establish early warning systems to predict potential crisis developments in both domestic and foreign grain markets.

Conclusions. Modern economic conditions are characterized by unprecedented levels of variability, uncertainty, complexity, and ambiguity, as defined by the VUCA concept. Environment. Instead, the formation of new management models focused on speed of response, flexibility, and the ability to transform constantly has become a key condition for ensuring enterprise competitiveness. Adaptive management strategies in the VUCA environment ensure the efficient functioning of agricultural producers. Their implementation will allow the formation of a dynamic, sustainable, and flexible management system, both to respond to changes and to use them for development opportunities. Therefore, enterprises will be able to maintain economic stability in the short term and ensure sustainable development in the long term.

The proposed integration of financial control into the management systems of agro-industrial enterprises in the VUCA environment enhances their ability to adapt to the dynamic conditions of the grain market, thereby increasing economic stability and competitive positions. Automation of control procedures, the use of digital analytical platforms, modelling of financial risks, and the introduction of forecast planning provide enterprises with the flexibility to respond to external fluctuations and uncertainty. Integrated financial controlling serves as an internal monitoring tool, ensuring transparency in management decisions in the VUCA environment and fostering an efficient, open grain market amid digital transformation and growing systemic challenges.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ:

1. Бюттнер Т. VUCA робочий світ – Що це означає? Echometer GmbH. 2025. URL: https://echometerapp.com/uk/vuca-workworld/
2. Roles of Nanus and Bennis. VUCA-World. 2024. URL: https://www.vuca-world.org/roles-of-nanus-and-bennis/
3. Bennett N., Lemoine G. J. What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons*, 2014. Vol. 57 (3), p. 311–317. DOI: https://doi.org/10.1016/j.bushor.2014.01.001
4. Mack O., Khare A., Kramer A., Burgartz T. (2015). Managing in a VUCA World. Springer. 259 p. DOI: https://doi.org/10.1007/978-3-319-16889-0
5. Орлов В. Ідентифікація факторів формування економічного потенціалу насінницьких підприємств. *Економіка та суспільство*, 2023. Вип. 49. DOI: https://doi.org/10.32782/2524-0072/2023-49-57
6. Ілляшенко О. В., Фісенко О. С. Виявлення чинників загроз безпековій діяльності сільськогосподарських підприємств в умовах нестабільного бізнес-середовища. *Науковий вісник Ужгородського національного університету*, 2020. Вип. 34. С. 88–92 DOI: https://doi.org/10.32782/2413-9971/2020-34-15
7. Тодощук А. В., Остащук Р. М., Стеблій О. І., Колобов І. Ю. Менеджмент в умовах VUCA-світу та шляхи подолання невизначеності. *Агросвіт*, 2024. № 19. DOI: https://doi.org/10.32702/2306-6792.2024.19.83
8. Чмут А.В., Чмут О.О. Сучасні виклики менеджменту в умовах VUCA-світу. *Науковий вісник Херсонського державного університету*, 2023. Вип. 47. С. 47–52.
9. Кощій О., Корецька Н., Василик Н. Управління організацією в умовах VUCA. *Економічний журнал Волинського національного університету імені Лесі Українки*, 2023. № 3 (35). С. 129–135.
10. Халіна В., Абєлєнцев Є. Теорія адаптації бізнесу до умов невизначеності. *Економіка та суспільство,* 2023. Вип. 55. DOI: https://doi.org/10.32782/2524-0072/2023-55-6
11. Ципліцька О., Дейнеко О. Адаптивність стратегічного планування промислового розвитку в умовах глобальної нестабільності. *Економіка та суспільство*, 2023. Вип. (56). DOI: https://doi.org/10.32782/2524-0072/2023-56-140
12. Майстренко К., Білик О. Стратегічне планування в умовах невизначеності: адаптація до змін у публічному секторі в Україні. *Наукові праці Міжрегіональної Академії управління персоналом. Політичні науки та публічне управління*, 2023. Вип. 2 (68), С. 100–104. DOI: https://doi.org/10.32689/2523-4625-2023-2(68)-14
13. Корбутяк А. Г., Сокровольська Н. Я. Сучасні інструменти контролінгу витрат в умовах обмеженості ресурсів. *Економіка та суспільство*, 2022. № 37. URL: https://economyandsociety.in.ua/ index.php/journal/article/view/1235
14. Никитюк Ю. А. Напрями розвитку кластерної організації господарювання в аграрному секторі економіки. *Вісник ХДУ. Серія: Економічні науки*, 2018. Т. 4. № 30. С. 49–53.

REFERENCES:

1. Biuttner T. VUCA robochyi svit – Shcho tse oznachaie? Echometer GmbH. 2025. URL: https://echometerapp.com/uk/vuca-workworld/
2. Roles of Nanus and Bennis. VUCA-World. 2024. URL: https://www.vuca-world.org/roles-of-nanus-and-bennis/
3. Bennett N., Lemoine G. J. What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons*, 2014. Vol. 57 (3), p. 311–317. DOI: https://doi.org/10.1016/j.bushor.2014.01.001
4. Mack O., Khare A., Kramer A., Burgartz T. (2015). Managing in a VUCA World. Springer. 259 p. DOI: https://doi.org/10.1007/978-3-319-16889-0

5. Orlov V. Identyfikatsiia faktoriv formuvannia ekonomichnoho potentsialu nasinnytskykh pidpryiemstv. *Ekonomika ta suspilstvo*, 2023. Vyp. 49. DOI: https://doi.org/10.32782/2524-0072/2023-49-57

6. Illiashenko O. V., Fisenko O. S. Vyiavlennia chynnykiv zahroz bezpekovii diialnosti silskohospodarskykh pidpryiemstv v umovakh nestabilnoho biznes-seredovyshcha. *Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu*, 2020. Vyp. 34. S. 88–92 DOI: https://doi.org/10.32782/2413-9971/2020-34-15

7. Todoshchuk A. V., Ostashchuk R. M., Steblii O. I., Kolobov I. Yu. Menedzhment v umovakh VUCA-svitu ta shliakhy podolannia nevyznachenosti. *Ahrosvit*, 2024. № 19. DOI: https://doi.org/10.32702/2306-6792.2024.19.83

8. Chmut A.V., Chmut O.O. Suchasni vyklyky menedzhmentu v umovakh VUCA-svitu. *Naukovyi visnyk Khersonskoho derzhavnoho universytetu*, 2023. Vyp. 47. S. 47–52.

9. Koshchii O., Koretska N., Vasylyk N. Upravlinnia orhanizatsiieiu v umovakh VUCA. *Ekonomichnyi zhurnal Volynskoho natsionalnoho universytetu imeni Lesi Ukrainky*, 2023. № 3 (35). S. 129-135.

10. Khalina V., Abielientsev Ye. Teoriia adaptatsii biznesu do umov nevyznachenosti. *Ekonomika ta suspilstvo*, 2023. Vyp. 55. DOI: https://doi.org/10.32782/2524-0072/2023-55-6

11. Tsyplitska O., Deineko O. Adaptyvnist stratehichnoho planuvannia promyslovoho rozvytku v umovakh hlobalnoi nestabilnosti. *Ekonomika ta suspilstvo*, 2023. Vyp. (56). DOI: https://doi.org/10.32782/2524-0072/2023-56-140

12. Maistrenko K., Bilyk O. Stratehichne planuvannia v umovakh nevyznachenosti: adaptatsiia do zmin u publichnomu sektori v Ukraini. *Naukovi pratsi Mizhrehionalnoi Akademii upravlinnia personalom. Politychni nauky ta publichne upravlinnia*, 2023. Vyp. 2 (68), S. 100–104. DOI: https://doi.org/10.32689/2523-4625-2023-2(68)-14

13. Korbutiak A. H., Sokrovolska N. Ya. Suchasni instrumenty kontrolinhu vytrat v umovakh obmezhenosti resursiv. *Ekonomika ta suspilstvo*, 2022. № 37. URL: https://economyandsociety.in.ua/index.php/journal/article/view/1235

14. Nykytiuk Yu. A. Napriamy rozvytku klasternoi orhanizatsii hospodariuvannia v ahrarnomu sektori ekonomiky. *Visnyk KhDU. Seriia: Ekonomichni nauky*, 2018. T. 4. № 30. S. 49–53.

Стаття надійшла до редакції: 07.06.2025; рецензування: 25.06.2025;
прийнята до публікації 02.07.2025. Автори прочитали и дали згоду рукопису.
The article was submitted on 07.06.2025; revised on 25.06.2025; and accepted for publication on 02.07.2025. The authors read and approved the final version of the manuscript.