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# Marketing-Oriented Foresight as a Strategic Direction of Agrarian Enterprises' Activity in the Context of Environmental Sustainability and Climate Adaptation

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**Abstract:** The article examines marketing-oriented foresight as a strategic tool for agrarian enterprises amid global instability. The theoretical and methodological foundations of integrating the marketing approach with foresight technologies in agricultural strategic management are defined. The authors substantiate an original concept of «marketing-oriented foresight» that combines prognostic-analytical methods, market orientation, and strategic planning adapted to agribusiness specifics. A structural-functional model for marketing-oriented foresight implementation across enterprises of various sizes is proposed, and international experience is analyzed with recommendations for Ukrainian adaptation. The impact of digitalization, climate change, and geopolitical turbulence on the strategic marketing transformation of agrarian enterprises is analyzed. Special attention is paid to environmental variables — carbon footprint, biodiversity conservation, soil health, and circular-economy principles — as core components of foresight. The EU Green Deal and Farm to Fork strategy are shown to function not merely as regulatory constraints but as key drivers of marketing-oriented environmental adaptation; neglecting these dimensions leads to systematic overoptimism regarding export competitiveness in EU markets. The interdependence between marketing orientation level and foresight effectiveness is established. A methodological approach to assessing enterprise readiness for marketing-oriented foresight implementation is proposed and empirically tested through a survey of 130 agrarian enterprises in Kharkiv, Poltava, Dnipropetrovsk, and Sumy oblasts (2021 and 2023). Directions for further development of foresight practices in Ukraine's agricultural sector under post-war recovery and European integration are outlined.

**Keywords:** marketing-oriented foresight, agrarian enterprises, strategic planning, marketing, forecasting, agri-food market, competitiveness, digitalization, European integration, strategic management, environmental sustainability, carbon footprint, circular economy, climate adaptation, biodiversity, EU Green Deal

## 1. Introduction

The current state of Ukraine's agricultural sector is characterized by an unprecedented combination of challenges and opportunities, which calls for fundamentally new approaches to the strategic management of enterprises in the industry. On the one hand, Russia's full-scale invasion has significantly destabilized the production and marketing activities of agricultural producers, caused substantial damage to the material and technical base, disrupted logistics supply chains, and altered the configuration of foreign trade flows. On the other hand, the prospect of European integration, large-scale recovery programs, and growing demand for food in global markets opens new development horizons for enterprises that can effectively adapt to the new conditions.

Furthermore, the environmental dimension of agrarian development is no longer a matter of voluntary corporate social responsibility but a hard constraint and a competitive battlefield. Global agri-food chains are rapidly introducing carbon border adjustment mechanisms, biodiversity disclosure requirements, and environmental footprint traceability. Ukrainian agrarian enterprises, even in the context of post-war recovery, must integrate these environmental parameters into their strategic foresight — otherwise, they risk losing access to

EU and global markets. This transforms environmental sustainability from an external threat into a marketing-oriented strategic resource.

In this context, the ability of agricultural enterprises not merely to react to changes in the external environment, but to anticipate them and formulate appropriate strategic responses in advance, takes on particular significance. This is where foresight comes to the fore – a methodology of long-term forecasting that allows for modeling possible future scenarios and making informed management decisions in conditions of uncertainty. However, traditional foresight methods, developed primarily for the national level or the industry as a whole, require significant adaptation for application at the individual enterprise level, especially in the agricultural sector.

It is fundamentally important to combine foresight with the enterprise's marketing orientation. Marketing-oriented foresight involves not only forecasting general trends but also systematically studying the evolution of consumer preferences, the transformation of market structures, changes in the competitive environment, and the development of corresponding long-term marketing strategies. This approach allows an agricultural enterprise to remain competitive not only today but also to secure a stable market position in the long term.

The research topic's relevance is also driven by several interrelated trends shaping the current development of agri-food markets. First, there is the acceleration of technological change in agriculture, linked to the spread of precision farming, artificial intelligence, biotechnology, and digital platforms. Second, there is growing consumer environmental awareness and tightening regulatory requirements for the environmental sustainability of agricultural production amid the implementation of the EU Green Deal. Third, it is climate change, which is significantly transforming the conditions of agricultural production and requiring a reevaluation of traditional agricultural technologies and farming systems. Fourth, geopolitical instability leads to sharp fluctuations in prices for agricultural raw materials and finished products on global markets.

Despite growing scientific interest in foresight issues in the agricultural sector, the topic of marketing-oriented foresight as a comprehensive concept for the strategic management of agricultural enterprises remains underdeveloped in domestic scientific literature. Most existing studies either focus exclusively on macro-level foresight research in the agricultural sector or, conversely, consider marketing planning without accounting for foresight methodology. Moreover, the environmental dimension — carbon regulation, biodiversity requirements, circular economy principles — remains almost completely disconnected from marketing-oriented foresight in Ukrainian agrarian research, despite its critical importance for EU market access. Filling this research gap is the objective of this study.

The purpose of this article is to provide a theoretical and methodological justification for marketing-oriented foresight as a strategic direction for agricultural enterprises and to develop practical recommendations for its implementation. To achieve this goal, the following tasks are addressed: clarifying the conceptual and categorical framework of marketing-oriented foresight in the agricultural sector; analyzing the methodological foundations for combining the marketing approach with foresight technologies; developing a structural-functional model of marketing-oriented foresight for agricultural enterprises; studying international experience and formulating recommendations for Ukrainian agricultural producers.

## 2. Literature Review and Analysis of Previous Research

The concept of foresight as a tool for strategic anticipation and future management has come a long way, beginning with the first technology forecasts that emerged in the United States in the 1950s. The seminal works of Kahn and Wiener (1967), Gillechrist (1982), and later Popper (2008) and Mulvihill (2009) laid the methodological foundations of foresight as a scientific discipline. Foresight is defined as a systematic process of constructing medium- and long-term perspectives in science, technology, the economy, and society to identify new technologies and areas of strategic research that will yield the greatest economic and social benefits (Popper, 2008). This definition emphasizes foresight's focus not merely on prediction, but also on actively shaping the desired future.

In the context of the agricultural sector, foresight research has become widespread primarily at the level of the Food and Agriculture Organization of the United Nations (FAO), the Organization for Economic Cooperation and Development (OECD), and leading national research centers. In particular, foresight projects such as "Agri-Food 2050" (OECD-FAO, 2022), the FAO's "Future of Food and Agriculture" (FAO, 2018), and similar initiatives have shaped a comprehensive vision of long-term trends in the global agricultural sector. Among the key challenges identified in these studies are: the need to ensure food security for the planet's growing population, which is projected to reach 9.7 billion people by 2050; climate change, which threatens to reduce yields of major crops in traditional farming regions; depletion of natural resources (soil, water, biodiversity); and the transformation of food consumption patterns toward greater sustainability and environmental friendliness.

The marketing component of foresight began to be actively explored in the works of Kotler and Trias de Bes (2003), who introduced the concept of "lateral marketing" as a tool for identifying new market opportunities through unconventional thinking. The concept of market orientation, developed by Kochli and Jaworski (1990) and further elaborated by Narver and Slater (1990), emphasizes the importance of systematically collecting and using market information to formulate competitive strategies. The combination of these ideas with the foresight methodology forms the methodological foundation of marketing-oriented foresight, which, by its nature, is an integrative concept that unites the market orientation of an enterprise with the horizons of strategic foresight.

Recent foresight studies in agribusiness (Bogonos et al., 2023; Saguy et al., 2025) confirm that environmental scenarios — carbon pricing, soil degradation, water scarcity — are no longer peripheral but central to long-term competitiveness. The EU Green Deal and Farm to Fork strategy have transformed environmental performance from a matter of corporate reputation into a hard market access criterion. Nevertheless, in Ukrainian agrarian practice, the environmental dimension remains largely detached from marketing-oriented foresight, which constitutes a critical research gap addressed by this study.

In the domestic scientific tradition, works by Mesel-Veselyak and Fedorov (2016), Riabokon (2020), Sabluk (2021), Zinchuk and Kutsmus (2023), Sydorchuk et al. (2024) and Tataryntseva (2025) are devoted to the study of strategic management of agricultural enterprises. Issues of foresight in the context of the agricultural sector's development were examined in the works of Lupenko and Andros (2020), Kuznetsova and Biloserkovets (2021), Iastremska (2025), Reshetnyak (2019), and Kvitka (2018). The marketing aspects of agricultural enterprise development have been systematically analyzed in studies by Kukoba and Tymoshenko (2024) and by several foreign scholars – Kohli and Jaworski (1990), Beierlein and Woolverton (1991), Sporrleder and Goldsmith (2001), Lee and Su (2011).

At the same time, it should be noted that, despite some related studies, a comprehensive study of marketing-oriented foresight as a strategic tool for managing agricultural enterprises has not yet been conducted in domestic science. There is a lack of a theoretical concept that integrates the marketing approach and foresight methodology for the specific conditions of agribusiness. This is precisely what determines the relevance and scientific novelty of this study.

An analysis of international experience indicates a growing interest in applying foresight methods to the corporate strategy of agri-food companies (Aaltonen & Sanders, 2017; Bento et al., 2022; Jacobsen & Hirvensalo, 2024; Chukurna et al., 2025; arkH3, 2025). In particular, research by Haarhaus and Liening (2020) demonstrates that companies that systematically use scenario planning and foresight methods exhibit 33% greater resilience to market shocks than those that do not. A study of the practices of agri-food multinationals such as Nestlé, Unilever, and Cargill shows that they have long since implemented systematic corporate foresight, whereas most domestic agricultural enterprises still rely primarily on traditional planning approaches.

## 3. Methods

The methodological foundation of this study consists of a set of general scientific and specialized research methods. A systematic approach provides a holistic view of marketing-oriented foresight as an interrelated system of elements. The dialectical method is used to study the contradictions and patterns of development of the phenomena and processes under investigation. The abstract-logical method is applied to formulate theoretical generalizations and to construct the conceptual framework of the study.

Among the specific scientific methods used are: bibliometric analysis methods for systematizing scientific sources on the research topic; comparative analysis methods for studying international experience in the application of foresight in the agricultural sector; the structural-functional analysis method for constructing a model of marketing-oriented foresight; and strategic analysis methods (PESTLE analysis, scenario planning, and analysis of key success factors) to characterize the external environment factors of agricultural enterprises.

The information base of the study consists of: scientific publications by domestic and foreign scholars in peer-reviewed journals; statistical data from the State Statistics Service of Ukraine; analytical materials from the Ministry of Agrarian Policy and Food of Ukraine; reports and forecasts from international organizations (FAO, OECD, World Bank); business analytics from leading consulting firms in the industry (McKinsey, Deloitte, PwC); materials from foresight studies conducted in various countries regarding the development of agri-food systems.

The results of the empirical part of the study are based on a survey conducted by the authors among managers and marketers of agricultural enterprises in the Kharkiv, Poltava, Dnipropetrovsk, and Sumy regions. A total of 130 representatives of the agricultural sector were surveyed, representing enterprises of various sizes – from small farms to large agricultural holdings. The survey was conducted in two phases: a baseline wave

in 2021 (pre-war conditions) and a follow-up wave in 2023 (wartime conditions). This approach enabled tracking the dynamics of changes in the agricultural business's strategic priorities.

## 4. Results

Before formulating our own definition of marketing-oriented foresight, let us examine its key components. Foresight (from the English "foresight" – prediction) is defined in various ways in the scientific literature, depending on the level and context of application. At the national level, foresight is a systematic process that engages all stakeholders in shaping a long-term vision and priorities for scientific, technological, and socio-economic development. At the enterprise level, foresight takes on the character of a strategic tool that allows management to systematically track "weak signals" of changes in the external environment, model alternative scenarios of events, and formulate appropriate strategic responses (Verdenhofa et al., 2018; Mainka et al., 2023; Dvornyk and Garafonova, 2025; Karbovska et al., 2026).

Based on an analysis of scientific sources and our own research, we propose the following definition: marketing-oriented foresight for an agricultural enterprise is a comprehensive system of strategic anticipation and managerial response based on systematic monitoring of the market environment, the identification and analysis of long-term trends in the development of agri-food markets, the construction of alternative scenarios for their evolution, and the formulation of corresponding marketing strategies aimed at ensuring the enterprise's sustainable competitiveness in conditions of uncertainty and dynamic changes in the external environment.

This definition highlights several fundamentally important characteristics of marketing-oriented foresight. First, it emphasizes its systematic nature – it is not about isolated predictive calculations, but rather a comprehensive system encompassing organizational, methodological, and informational components. Second, it is a clear combination of foresight methodology and a marketing approach – marketing orientation serves not only as a starting point for foresight but also defines the structure of its subject area. Third, it is a practical, management-oriented focus – the result of marketing-oriented foresight is concrete strategic decisions, not merely predictive studies. Fourth, it involves adaptation to the specifics of the agribusiness – taking into account the cyclical nature of agricultural production, seasonality, dependence on natural factors, and the specifics of food markets.

The key differences between marketing-oriented foresight and related approaches can be systematized as follows. Compared to traditional foresight: first, the subject area of MOF integrates demand-side intelligence — consumer preference evolution, competitive repositioning, and value-chain reconfiguration — which classical technology foresight treats as secondary outputs rather than primary drivers; second, MOF operates at the enterprise level and produces actionable strategic decisions calibrated to a specific firm's resource base and market position, whereas national or sectoral foresight produces policy recommendations that individual firms cannot directly operationalize; third, MOF explicitly couples scenario outcomes with marketing strategy formulation, closing the gap between foresight analysis and strategic action — a gap that is well-documented in the foresight literature (Haarhaus & Liening, 2020) but rarely bridged in agricultural management practice. The novelty of MOF thus lies not in the individual components, which are established, but in their purposeful integration into a firm-level decision architecture tailored to the specific institutional and market conditions of agribusiness. Compared to traditional marketing planning: first, MOF extends the planning horizon to 5–20 years, a range that is necessary but routinely absent in agricultural SME strategy, as confirmed by the survey data (63% of respondents in 2021 and 79% in 2023 operated with horizons of one year or less); second, MOF systematically incorporates structural uncertainty through scenario construction and weak-signal monitoring, whereas conventional marketing planning treats the environment as largely predictable and confines sensitivity analysis to price and volume; third, and most critically for the agri-food context, MOF embeds environmental regulatory foresight — including CBAM trajectories, biodiversity disclosure requirements, and soil health metrics — as core planning inputs rather than external risks to be noted and set aside. This environmental integration constitutes a genuine extension beyond existing integrative frameworks, such as those of Verdenhofa et al. (2018), which preceded the regulatory transformation triggered by the EU Green Deal.

Structurally, marketing-oriented foresight for an agricultural enterprise encompasses the following key components. The first component is environmental monitoring, which involves systematic tracking of macroeconomic trends, conditions in agri-food markets, technological changes in the agricultural sector, regulatory changes, and shifts in consumer preferences. The second component is analytical processing, which involves analyzing the collected information, identifying patterns and trends, and pinpointing "weak signals" and potential "wild cards." The third block is scenario planning, i.e., the development of 2–4 alternative scenarios for the evolution of the market environment over a 5–10-year horizon. The fourth block is strategic response, i.e., the development of marketing strategies for each scenario or for resilient strategies across multiple scenarios.

The fifth block is implementation monitoring, which includes tracking key indicators and timely adjustment of strategies (Miles, 2010; Verdenhofa et al., 2018; Nitsenko et al., 2019; Kovalchuk et al., 2024).

The methodological foundation of marketing-oriented foresight consists of a wide range of methods that can be classified according to various criteria. Based on the nature of the information, qualitative and quantitative methods are distinguished. Based on the level of stakeholder participation, methods are categorized into those involving broad participation and those based on the work of a narrow circle of experts. By forecasting horizon, methods are categorized as short-term (1–3 years), medium-term (3–10 years), and long-term (10–30 years). For agricultural enterprises, the medium-term horizon is most relevant, as it corresponds to the duration of transition processes in the production and market spheres (Velychko and Munka, 2023). A comparative overview of key marketing-oriented foresight methods is presented below (see Table 1).

**Table 1.** Comparative Characteristics of Key Methods of Marketing-Oriented Foresight for Agrarian Enterprises

| Method | Horizon | Resource Intensity | Suitability for SMEs | Marketing Focus |
|---|---|---|---|---|
| Scenario Planning | 5–20 years | Medium | High | Medium |
| Delphi Method | 3–15 years | High | Low | Medium |
| Weak Signal Analysis | 2–10 years | Low | High | High |
| Technology Forecasting | 5–20 years | High | Low | Low |
| PESTLE Analysis | 1–5 years | Low | High | Medium |
| Wild Cards Analysis | 1–20 years | Low | High | Medium |
| Cross-Impact Analysis | 3–10 years | High | Low | Medium |
| Big Data / AI Analytics | 1–5 years | High | Medium | High |

Source: authors' development

Among the most frequently used qualitative methods in marketing-oriented foresight for agricultural enterprises, the following should be highlighted. The Delphi method involves a series of expert surveys to reach consensus on key trends and forecasts (Guliyev et al., 2025; Lutkovska et al., 2025). For an agricultural enterprise, the group of experts involved may include agronomists, marketers, economists, representatives of trade organizations, scientists, and risk management specialists. Importantly, the Delphi methodology allows for the consideration of diverse perspectives and minimizes the influence of authority figures, which is particularly valuable when studying unpredictable market phenomena. Of all the methods reviewed, scenario planning and weak signal analysis are the most accessible for small farming operations, as they require no specialized software, can be conducted within an existing advisory network, and yield actionable strategic insights even with limited data resources; the Delphi method, by contrast, demands greater organizational capacity and is therefore most suitable for medium and large agricultural enterprises or cooperative foresight initiatives.

The scenario planning method is arguably central to the foresight toolkit. It involves constructing 3–4 internally consistent and plausible descriptions of alternative futures, each based on different assumptions regarding key drivers and uncertainties. For an agricultural enterprise, the key driving forces that form the "scenario axes" are typically: market conditions (favorable/unfavorable) and the level of technological development in the industry (traditional/innovative). The combination of these axes yields four basic scenarios: "Traditional Prosperity" (favorable market, traditional technologies), "Innovative Breakthrough" (favorable market, innovative technologies), "Traditional Adaptation" (unfavorable market, traditional technologies), and "Technological Survival" (unfavorable market, innovative technologies).

The analysis of "weak signals" is another important method of marketing-oriented foresight. Weak signals are early signs of change that have not yet become widespread but point to potentially significant future trends. For agricultural marketing, weak signals may include: the emergence of new consumer movements (e.g., the flexitarian diet, the zero-waste movement, growing demand for "ugly" fruits and vegetables), new technological developments in related industries, regulatory initiatives at the international level (even if they have not yet taken effect), and the emergence of new competitive formats (e.g., vertical farming, cultured meat, precision fermentation). The "wild cards" method complements work with weak signals: "wild cards" are unlikely but highly impactful events that could radically change the market environment. For the agribusiness sector, examples of "wild cards" include the sudden emergence of a new dangerous pathogen affecting plants or animals, a major breakthrough in synthetic food technologies, unexpected changes in the trade or agricultural policies of key trading partners, and large-scale climate anomalies.

Among the quantitative methods of marketing-oriented foresight, the following play an important role: econometric models for forecasting demand and prices in agri-food markets; the cross-impact analysis model,

which allows for the assessment of the mutual influence of various trends and events; and tech assessment, which forecasts the timeframe for the diffusion of key technological innovations (Petrenko et al., 2025). Quantitative methods allow foresight analysis to be more concrete and verifiable, although they are inferior to qualitative methods in their ability to account for nonlinear and systemic effects (Aleinikova et al., 2023; Corallo et al., 2024; Petrenko et al., 2025). Integrating qualitative and quantitative methods within a hybrid approach is the most productive strategy for an agricultural enterprise (Sumets et al., 2022; Mykhnovetskyi, 2024). For example, qualitative scenario planning can be complemented by quantitative modeling of each scenario's financial parameters, thereby significantly enhancing the practical value of foresight analysis for strategic management.

Developing effective marketing-oriented foresight for Ukrainian agricultural enterprises requires a clear understanding of the key trends shaping the development of agri-food markets in the medium term. In addition to traditional market and technological drivers, environmental regulatory trends — particularly the EU Carbon Border Adjustment Mechanism (CBAM), deforestation-free supply chain requirements, and soil health directives — are emerging as critical determinants of long-term export competitiveness. Based on the analysis conducted using the PESTLE methodology and the systematization of results from leading international foresight studies, we propose the following classification of key trends by thematic blocks (Table 2).

**Table 2.** Key Trends in Agri-Food Markets in the Medium Term and Their Impact on Strategies of Ukrainian Agrarian Enterprises

| Trend / Block | Key Manifestations | Opportunities for Ukrainian Agribusiness | Risks | Priority | Monitoring Method |
|---|---|---|---|---|---|
| Healthy Nutrition | Demand for natural, functional, minimally processed products | Organic production, specialty crops, medicinal plants | Competition with EU organic producers | High | Consumer preference surveys; retail data analytics; food industry reports (Euromonitor, Nielsen) |
| Plant-Based Revolution | Growth of plant-based share to 10–15% of protein market by 2030 | Soy, peas, chickpeas, lupin production | Threat to traditional livestock sector | High | Social media monitoring for alternative protein trends; commodity databases (FAO, USDA) |
| Technological Transformation | Precision farming, AI, drones, IoT, genome editing | Yield increase (10–20%), cost reduction (15–25%) | High capital requirements | Medium | Patent and innovation databases; agri-tech startup tracking; precision farming adoption surveys |
| Climate Uncertainty | Droughts, extreme events, agroclimatic shifts | New crops, irrigation systems | Yield decline in southern/central regions | Critical | Agroclimatic models (USDA WASDE, Copernicus); drought and yield anomaly indices |
| European Integration / CAP | Farm to Fork: -50% pesticides, 25% organic by 2030 | Access to EU markets, support programs | Increased domestic competition | Critical | EU regulatory databases (EUR-Lex); CAP monitoring reports by agri-policy research institutes |

**Table 2.** cont.

| Trend / Block | Key Manifestations | Opportunities for Ukrainian Agribusiness | Risks | Priority | Monitoring Method |
|---|---|---|---|---|---|
| Environmental Regulation (CBAM, Biodiversity, Circular Economy) | Carbon border adjustment, deforestation-free supply chains, soil health metrics, waste reduction targets | Green premiums, access to carbon-neutral value chains, investment in carbon farming, by-product valorization | Additional compliance costs, exclusion from EU markets, need for new accounting and monitoring systems | Critical | EU CBAM registry (DG TAXUD), biodiversity disclosure frameworks (TNFD), EFRAG reporting standards |
| Geopolitical Turbulence | Commodity price volatility, trade flow shifts | Market diversification, new export channels | Income volatility | Medium | Geopolitical risk indices; commodity exchange dashboards; trade flow databases (UN Comtrade) |

Source: compiled by the authors based on (OECD & FAO, 2022; FAO, 2018; European Commission, 2020; Goedde et al., 2020; Deloitte Insights, 2021; Melnykovych et al., 2026; Saguy et al., 2025; Bogonos et al., 2023).

Global food trends encompass several interrelated areas. The first is healthier eating: consumers in developed countries and the growing middle class in developing countries are increasingly mindful of their diets, choosing foods with proven health benefits, minimally processed and natural products, and reducing their intake of sugar, salt, and saturated fats (Fig. 1).

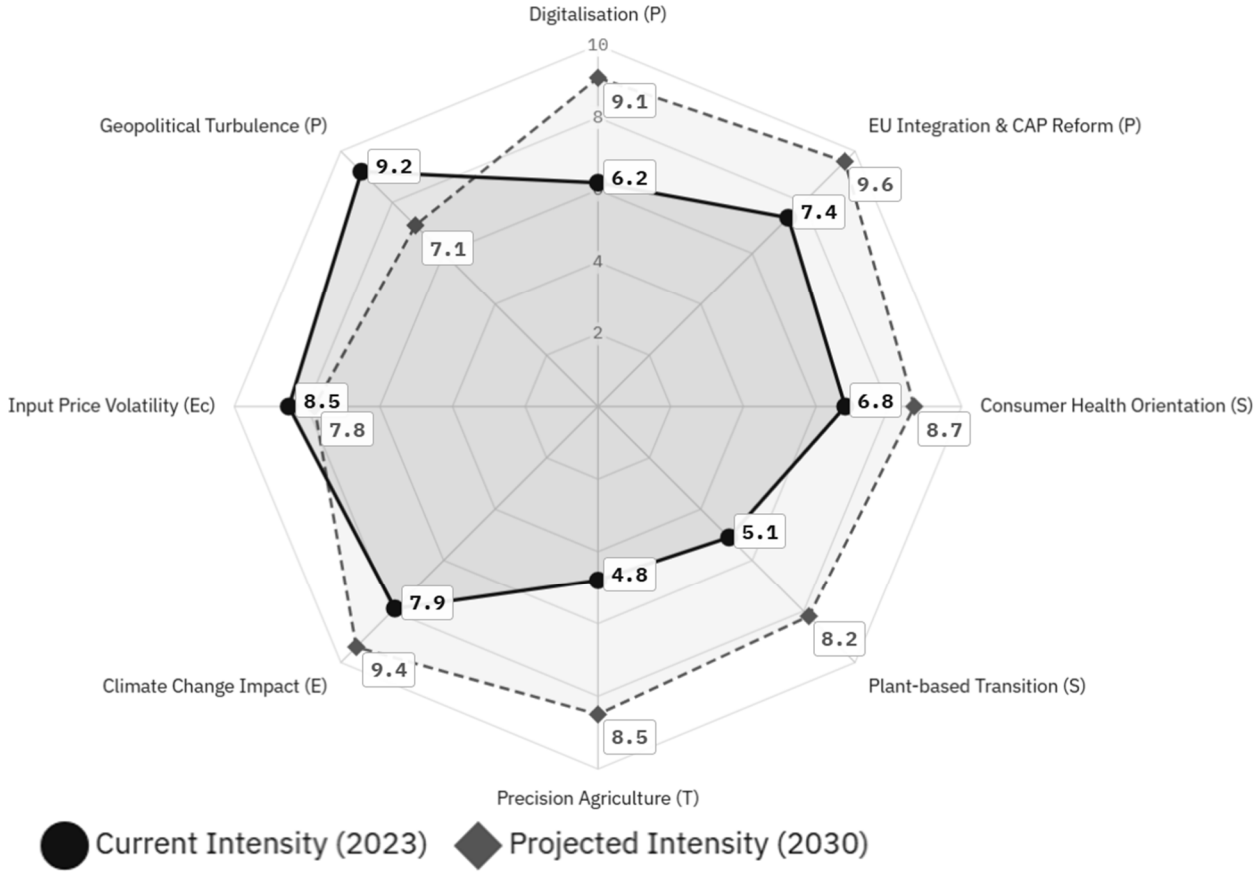


**Fig. 1.** Expert Assessment of Key Agri-food Market Trend Intensity for Ukrainian Enterprises (0–10): Current State (2023, assessed under conditions of active wartime hostilities) vs Projected Intensity (2030 Horizon) under PESTLE Analysis Framework (n = 130)
Source: author's development based on Bogonos et al. (2023).

For Ukrainian agricultural producers, this opens up opportunities in premium niches – organic products, functional foods, and specialty crops (medicinal plants, berries, and specialty oilseeds). The second major trend is the plant-based revolution and the transformation of protein consumption patterns. Demand for plant-based alternatives to animal protein has grown significantly over the past decade, and according to consulting agencies' forecasts, by 2030, plant-based meat and dairy substitutes could account for 10–15% of the global protein market (Saguy et al., 2025). For Ukrainian agricultural producers, this means growing demand for soybeans, peas, chickpeas, lupins, and other crops used to produce plant-based protein (Petrenko et al., 2025). At the same time, this trend poses a potential threat to traditional livestock farming (Fig. 2).

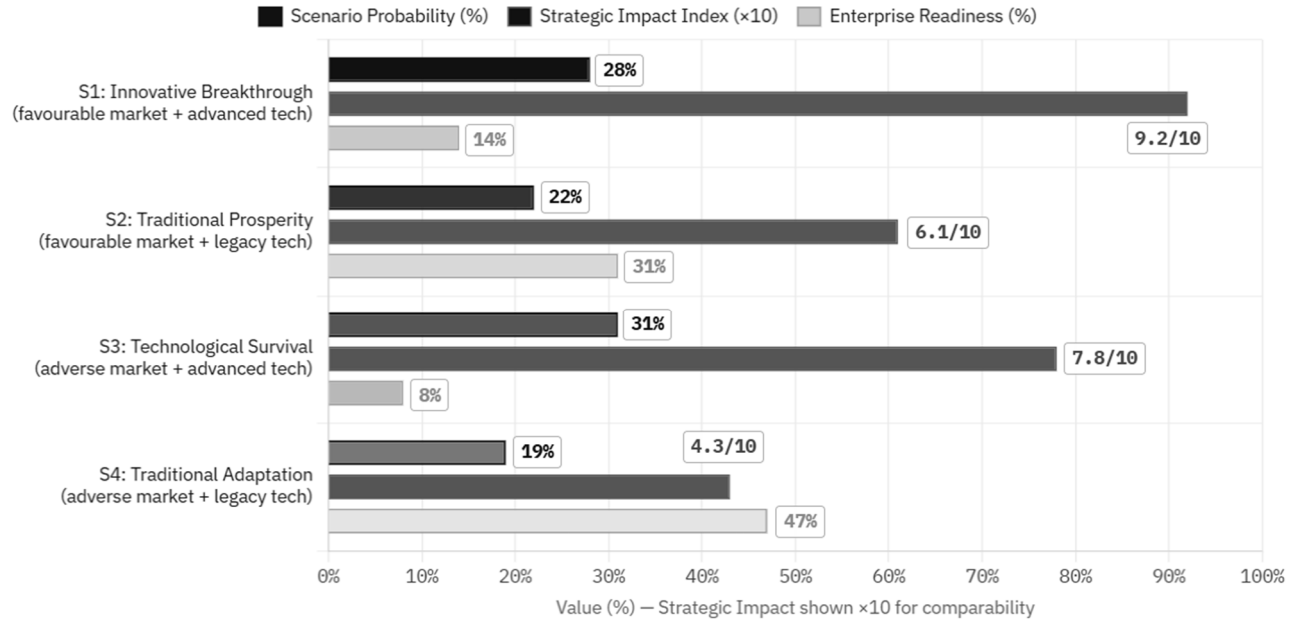


**Fig. 2.** Expert Assessment of Scenario Probability (%) and Strategic Impact Index (0–10) for Ukrainian Agri-food Markets under Marketing-Oriented Foresight Framework, 2025–2030 Horizon
Source: author's development.

The technological transformation of agricultural production is another key trend. The agro-chemical and digital revolution encompasses a wide range of innovations: precision agriculture based on GPS, drones, and IoT sensors; predictive analytics and AI-based agronomic decision support systems; new plant varieties and animal breeds developed using genome editing (CRISPR-Cas9); vertical and protected agriculture; and robotic harvesting systems (Zghurska et al., 2022; Saguy et al., 2025; Kuzior et al., 2026; Sultana et al., 2026). According to McKinsey estimates, adopting precision agriculture technologies can increase yields by 10–20% while simultaneously reducing costs for plant protection products and fertilizers by 15–25%.

Climate uncertainty and adaptation are particularly relevant for Ukraine. Domestic agricultural producers are already facing prolonged droughts in traditionally humid regions, increased frequency of extreme weather events, and shifts in agroclimatic zones.

Geopolitical transformation and the reorientation of trade flows are particularly important for Ukraine. EU accession will open access to the world's largest agri-food market, subject to the corresponding quality and safety standards. The EU's "Green Deal" and "Farm to Fork" strategy call for halving the use of pesticides and fertilizers by 2030 and increasing the share of organic farming to 25% of total area (Petrenko et al., 2025).

Based on theoretical analysis and a synthesis of practical experience, we have developed a structural-functional model of marketing-oriented foresight for an agricultural enterprise (Fig. 3).

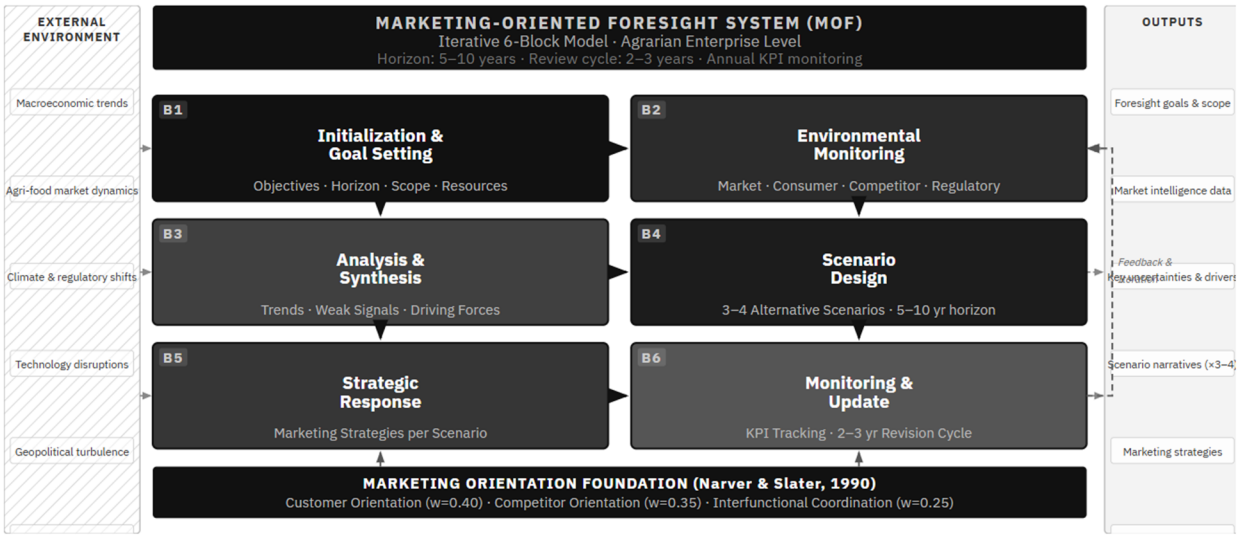


**Fig. 3.** Structural-Functional Model of Marketing-Oriented Foresight Implementation in Agrarian Enterprises' Strategic Management System (continuous iterative cycle; for medium-sized enterprises, a full foresight cycle review is recommended every 24 months with annual updates to monitoring outputs)
Source: author's development

The model is based on an iterative cycle that reflects the continuous nature of foresight activities and their integration into the company's strategic management. The model consists of six interconnected blocks. Block 1 – "Initialization and Goal Setting" – is the starting point of the foresight cycle: it defines the foresight goals, the forecasting horizon, the subject area, and the resources for foresight activities. For an agricultural enterprise, typical foresight objectives include identifying promising markets and niches, identifying technological directions for production development, and assessing the risks and opportunities associated with European integration (Petrenko et al., 2025). Block 2 – "Environmental Monitoring" – involves the systematic collection and initial processing of information about the enterprise's external environment, with a primary focus on consumer trends, market conditions, and the competitive environment. Block 3 – "Analysis and Synthesis" – involves processing the collected information using appropriate methods: trend analysis, the Delphi method, and stakeholder analysis. The key outcome of this block is the identification of key uncertainty factors and drivers of change. Block 4 – "Scenario Planning" – is the methodological core of the model, where 3–4 scenarios for the development of the enterprise's market environment are developed. Each scenario is described in a standardized format that includes a title and a narrative summary; key characteristics of the market environment (consumer demand, competitive structure, technological level, regulatory and climatic conditions); quantitative indicators; and key risks and opportunities for the enterprise. Block 5 – "Strategic Response" – is the applied outcome of the foresight analysis, in which specific marketing strategies are developed for each scenario: positioning, product, pricing, distribution, and communication. Block 6 – "Monitoring and Updating" – concludes the foresight cycle: for agricultural enterprises, it is recommended to conduct a full review of the foresight analysis every 2–3 years and to monitor it annually (Petrenko et al., 2025).

A key feature of the proposed model is its scalability – it can be used by enterprises of various sizes with appropriate adjustments to methods and resources. For large agricultural holdings, it is advisable to involve specialized foresight units and utilize the full range of quantitative methods. For small farms, a simplified version is recommended, with a primary focus on scenario planning and monitoring weak signals.

The development of foresight practices in the global agri-food business provides valuable examples for study and adaptation. The Netherlands is the undisputed leader in implementing systematic foresight in the agricultural sector among small countries with intensive agriculture. The Dutch Institute for Strategic Foresight at Wageningen University & Research publishes detailed foresight reports annually on key segments of the agri-food market, which are actively used by both large agricultural holdings and small farmers. A distinctive feature of the Dutch experience is the close integration of foresight with educational programs and advisory services for farmers, which allows even small farms to participate in the foresight culture (Savytskyi, 2022). The U.S. experience is valuable for corporate foresight among large agri-food companies. Companies such as Cargill, ADM, and Tyson Foods have developed their own strategic foresight systems. In particular, Cargill significantly expanded its plant-based protein division based on its own foresight analysis, identifying the trend toward growing demand for alternatives to animal protein long before it became widespread.

The Brazilian experience is particularly interesting due to its similarities with Ukraine (Petrenko et al., 2025): both countries are major producers and exporters of grains and oilseeds; both have significant potential for expanding production; and both face the need to transform their agricultural sectors amid growing environmental requirements. The Brazilian corporation EMBRAPA has developed a systematic foresight methodology for the agricultural sector, which includes annual sectoral foresight reports available to a wide range of agricultural producers (Saguy et al., 2025).

Israel's experience demonstrates that even in a complex geopolitical context and with limited natural resources, a foresight-oriented approach enables outstanding results: Israeli agricultural producers have achieved global leadership in drip irrigation, protected cultivation, and precision farming – precisely because of their systematic engagement with technological trends and proactive adaptation to future market needs.

A summary of international experience, taking into account key parameters of foresight activities in leading agricultural countries, is presented below (Table 3).

**Table 3.** Comparative Analysis of Foresight Practices in the Agricultural Sector of Selected Countries

| Country / Entity | Foresight Model | Horizon | SME Coverage | Key Outcomes |
|---|---|---|---|---|
| Netherlands (Wageningen UR) | Institutional + Corporate | 5–20 years | High (via advisory network) | Leadership in organics, precision farming, zero-waste |
| USA (Cargill, ADM, Tyson) | Corporate foresight (large companies) | 5–15 years | Low | Early repositioning in plant-based and sustainable production |
| Brazil (EMBRAPA) | Governmental / sectoral | 10–20 years | Medium (via state programs) | Climate adaptation, soybean expansion, agrotechnological breakthrough |
| Israel (state + universities) | Technological foresight | 5–15 years | High (cooperative model) | Drip irrigation, protected agriculture, global tech exports |
| Ukraine (current state) | No systematic approach | Up to 1 year | Very low | Reactive planning, low marketing orientation |

Source: compiled by the authors based on (Saguy et al., 2025; Savytskyi, 2022; Petrenko et al., 2025; UCAB, 2026; Bogonos et al., 2023; Mykhnovetskyi, 2024).

An analysis of international experience enables us to formulate several key recommendations for domestic agricultural enterprises on implementing marketing-oriented foresight. First, existing knowledge infrastructure should be actively utilized – international foresight reports from the FAO, OECD, leading universities, and consulting firms are publicly available and can serve as an excellent information base for conducting one's own foresight analysis. Second, it is advisable to pool the efforts of small and medium-sized agricultural producers within foresight cooperatives or industry associations to reduce the transaction costs of foresight activities. Concretely, a foresight cooperative serving 10–15 farms in a region can be organized as a working group within an existing farmers' association, meeting quarterly (two to three hours per session) and facilitated by a regional agrarian university extension specialist. Participation cost per farm: approximately USD 100–200 per year in advisory fees plus four to six hours of management time per quarter. The cooperative produces: a shared market monitoring dashboard, one annual scenario update, and a consolidated environmental regulatory watch report. This model requires no new legal entities and is immediately actionable within Ukraine's existing institutional framework. Third, it is important to build foresight not "from scratch," but based on the enterprise's existing planning and marketing functions (Riabinina, 2024). For a 300-hectare family farm, a practical MOF entry point is a single annual half-day session in which the farm manager, a trusted agronomist, and one external advisor collectively review two to three market scenarios for the coming three years, identify weak signals to monitor, and update one page of strategic notes. This minimal version requires no software, no dedicated staff, and no more than USD 300–500 in facilitation costs per year.

To obtain empirical data on the actual state of foresight practices and the marketing orientation of domestic agricultural enterprises, the authors conducted a structured survey of 130 representatives of the agricultural business in four regions of Left-Bank Ukraine (Petrenko et al., 2025). Enterprises were classified by size: small (up to 300 ha, 38% of the sample), medium (300–3,000 ha, 41%), large, and agricultural holdings (over 3,000 ha, 21%). The sectoral structure of the sample was as follows: crop production – 62%, mixed – 28%, livestock

production – 10%. The summarized results of the two-wave survey conducted in 2021 and 2023 are presented below (Table 4).

**Table 4.** Comparative Survey Results of Agrarian Enterprises Regarding Marketing Orientation and Foresight Practices (2021 vs 2023)

| Indicator | 2021 (Pre-war) | 2023 (Wartime) | Change (p.p.) | Comment |
|---|---|---|---|---|
| Planning horizon ≤ 1 year (share of enterprises) | 63% | 79% | +16 | Crisis shortened planning horizon |
| Systematic monitoring of consumer trends | 34% | 28% | –6 | Marketing is inferior to logistics & security → Marketing is inferior to logistics & security |
| Monitoring of competitive environment | 47% | 41% | –6 | Decline due to operational overload |
| Price monitoring | 58% | 64% | +6 | Increased due to market volatility |
| Marketing orientation level (Narver-Slater scale 0–5) | 2.8 | 2.4 | –0.4 | Below average, negative trend |
| Use of foresight methods | 7% | 9% | +2 | Mostly large enterprises |
| Exploration of new markets (incl. EU) | 18% | 41% | +23 | Forced reorientation |
| Interest in foresight methods | 68% | 72% | +4 | Potential demand for support |

Source: results of the author's survey (n = 130), 2021 and 2023

The survey results allow us to draw several key conclusions. Regarding the planning horizon: 63% of surveyed companies in 2021 indicated that their primary strategic planning horizon did not exceed 1 year; only 12% planned for a 3–5-year horizon, and only 3% had experience planning for 5–10 years. By 2023, the situation had worsened – the share of enterprises with a purely short-term horizon rose to 79% (Forbes Agro, 2026a). Clearly, such a shortened horizon is a significant constraint on effective foresight.

Regarding marketing orientation, only 34% of companies reported systematically collecting and analyzing information on consumer trends; 47% reported monitoring the competitive environment more or less regularly. The overall level of marketing orientation in the sample, assessed using the adapted Narver-Slater scale, was 2.8 out of 5 in 2021 and declined to 2.4 in 2023 – below average (Agribusiness in Ukraine, 2024).

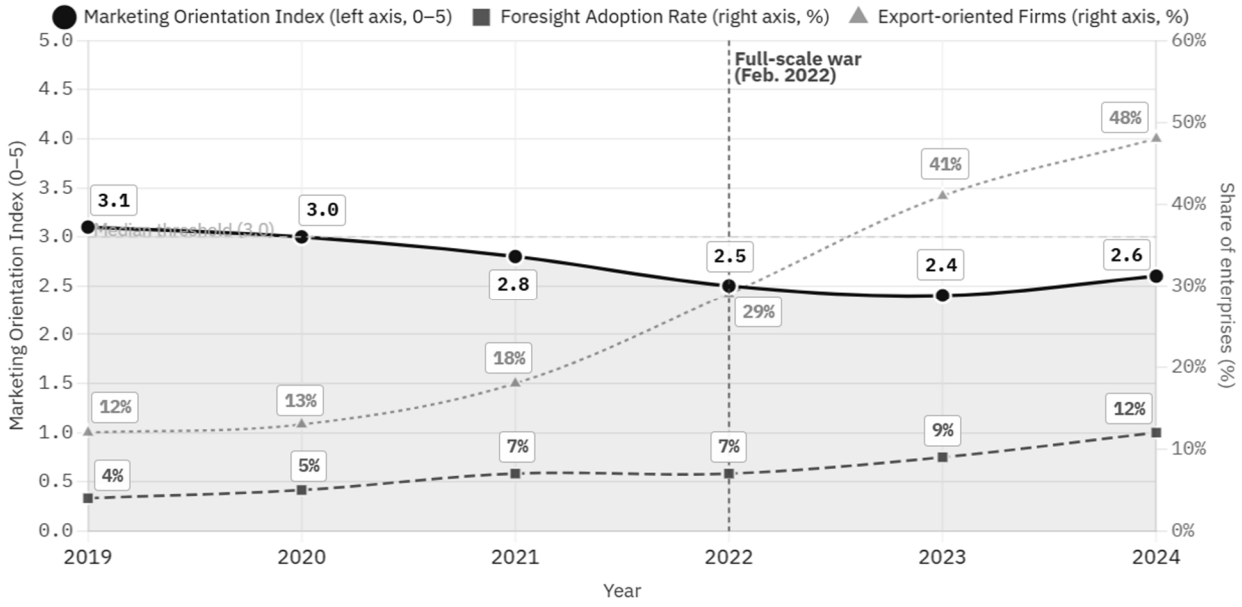


**Fig. 4.** Dynamics of the Marketing Orientation Index (Narver-Slater Scale, 0–5) and Foresight Adoption Rate (%) in Ukrainian Agrarian Enterprises, 2019–2024 (n = 130, Kharkiv, Poltava, Dnipropetrovsk, Sumy Oblasts)
Source: developed by the authors

Regarding foresight practices specifically: 71% of companies reported no knowledge of foresight methods at all; 22% had heard of these methods but do not use them; only 7% utilize at least some elements of foresight analysis (most of these are large enterprises and agricultural holdings). At the same time, 68% of respondents in 2021 and 72% in 2023 expressed interest in learning about foresight methods provided that appropriate methodological support is provided. A comparison of the two survey waves reveals a noticeable increase in the share of companies actively exploring new markets (particularly EU markets): from 18% to 41%, reflecting a forced reorientation due to the blockade of traditional sea routes (TEUS, 2026). This fact is extremely important from a foresight perspective: it is precisely the pragmatic necessity of seeking new markets that drives enterprises toward a more systematic understanding of their future market.

An expanded analysis of the results reveals several additional important patterns. First, there is a positive correlation between a company's size and the level of its marketing orientation and foresight competencies: large agricultural holdings have significantly higher scores on both measures, while small farms effectively lack access to foresight tools. Second, export-oriented enterprises demonstrate a significantly higher level of systematic monitoring of international markets and trends than enterprises operating primarily in the domestic market. Third, the top responses to the question about the main obstacles to implementing foresight are: lack of methodological knowledge (64%), limited financial resources (58%), lack of time among managers (49%), and distrust of long-term forecasts in an unstable environment (41%). Fourth, a preliminary comparison of the 5% of enterprises classified as "Advanced Level" on the MOFEM readiness index against the remaining 95% provides an initial indication of the relationship between MOF orientation and business performance. Advanced-Level enterprises reported: a higher share of EU market exports (38% of revenue vs. 14% for lower-readiness groups); a higher rate of new product or market introduction in 2021–2023 (62% vs. 23%); and greater operational continuity during the 2022 disruption (71% maintained core operations vs. 39% for lower readiness groups). While the subgroup size (n ≈6–7 enterprises) precludes statistical inference, the directional consistency across all three performance indicators provides preliminary empirical support for the MOF framework. A controlled comparative study — tracking matched pairs of MOF-adopting and non-adopting enterprises over a three-to-five-year post-war recovery period — is identified as the priority direction for subsequent research.

These results indicate that while the crisis context has heightened awareness of the need for strategic flexibility and the search for new opportunities, it has simultaneously made the conditions for implementing systematic foresight more challenging. Paradoxically, it is precisely during times of crisis and post-crisis that foresight becomes particularly valuable – but also particularly difficult to implement. This confirms the need not only to promote foresight approaches but also to develop simplified, resource-efficient foresight models adapted to the limited capabilities of the domestic agricultural sector.

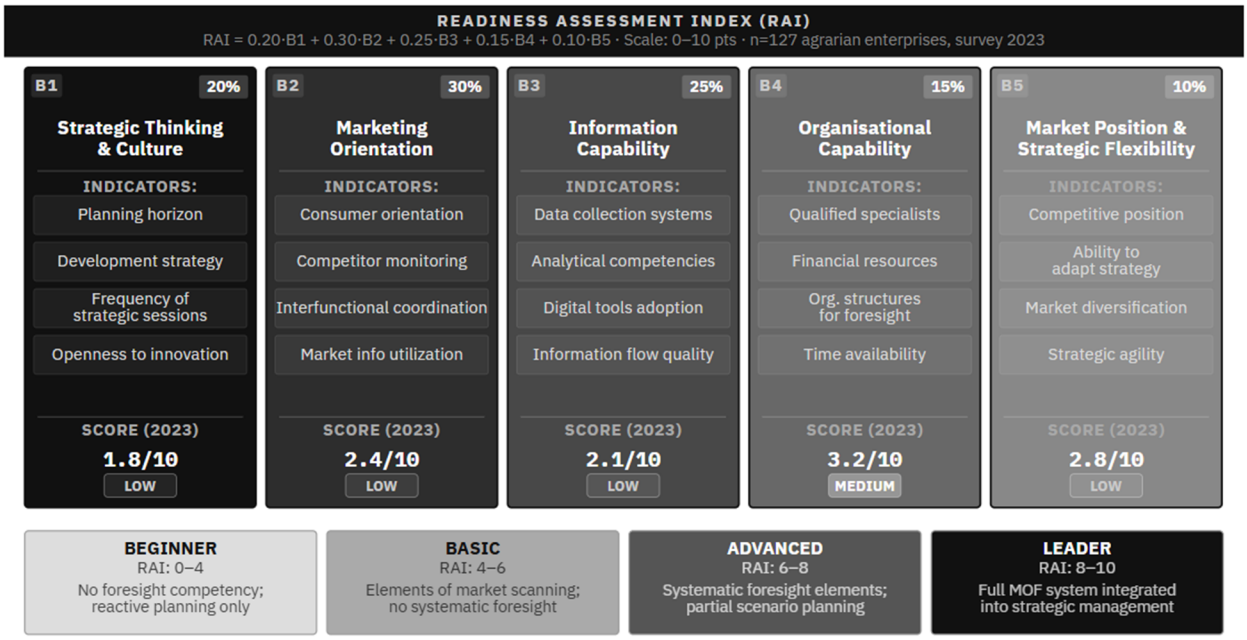


**Fig. 5.** Matrix for Assessing the Readiness of Agrarian Enterprises for Marketing-Oriented Foresight (MOF) Implementation: Five-Block Evaluation Framework with Weighted Scoring (n = 130, survey 2023)
Source: developed by the authors

The practical implementation of marketing-oriented foresight requires a preliminary assessment of the company's readiness. To this end, the authors have developed a methodological approach based on evaluating readiness across five key indicator blocks. Block 1 – "Strategic Thinking and Culture" – assesses the management team's propensity for long-term, strategic thinking, openness to uncertainty, and willingness to consider alternative future scenarios. Block 2 – "Marketing Orientation" – assesses the company's level of market orientation across three dimensions: customer orientation, competitor orientation, and cross-functional coordination. This block is critically important, as marketing orientation is a necessary condition for effective marketing-oriented foresight. Block 3 – "Information Capability" – assesses the company's ability to collect, process, and utilize external information. Block 4 – "Organizational Capability" – assesses the availability of organizational resources for foresight activities. Block 5 – "Market Position and Strategic Flexibility" – assesses the company's competitive position and its ability to adapt its strategy to environmental changes.

Each block is rated on a 10-point scale. Overall readiness for implementing marketing-oriented foresight is calculated as a weighted average index with different block weights: Block 1 – 20%, Block 2 – 30% (highest priority, as marketing orientation is at the core of the concept), Block 3 – 25%, Block 4 – 15%, Block 5 – 10%. Based on the assessment results, the company is classified into one of four readiness groups: "Beginner" (0–4 points), "Basic Level" (4–6 points), "Advanced Level" (6–8 points), "Leader" (8–10 points)—and receives corresponding recommendations regarding the development trajectory of foresight competencies. Testing the methodology on the study sample showed that 79% of enterprises fall into the "Beginner" group, 16% into the "Basic Level" group, and only 5% into the "Advanced Level" group. No enterprise in the sample met the criteria for the "Leader" group.

The digital transformation of the agricultural sector opens up fundamentally new opportunities for the development of marketing-oriented foresight, significantly expanding the methodological arsenal and reducing the transaction costs of foresight activities. Big data and predictive analytics enable the analysis of vast amounts of market, production, and consumer information that were previously inaccessible for systematic analysis. Of particular value to agricultural enterprises are: analysis of the dynamics of consumer preferences based on data from social networks, e-commerce platforms, and consumer reviews; analysis of price trends and trade flows based on data from international commodity exchanges; and analysis of weather trends and agroclimatic conditions based on data from weather stations and satellites.

Artificial intelligence and machine learning are transforming forecasting capabilities in the agricultural and market sectors. AI-based crop yield forecasting systems are already demonstrating accuracy that surpasses traditional agronomic estimates (AgroPortal.ua, 2025). Similar approaches are used to forecast prices in agricultural commodity markets, where AI models can account for a complex set of factors–from weather conditions in key production areas to geopolitical risks and trader behavior.

Digital platforms and ecosystems are opening new channels for direct communication between agricultural producers and end consumers, providing a unique opportunity to track the evolution of consumer preferences in real time. Analysis of trends in search queries, social media, and food delivery platforms can be a source of "weak signals" for marketing-oriented foresight.

At the same time, the development of digital foresight tools does not diminish but, in a certain sense, reinforces the importance of qualitative methods and human interpretation. Algorithms are good at identifying statistical patterns in large sets of structured data, but they are less effective at identifying qualitatively new, unprecedented trends and "wild cards". Therefore, the optimal model of digital marketing-oriented foresight involves a combination of powerful analytical tools and systematic expert work.

Ukraine's post-war recovery and the prospect of European integration create a unique context for the development of marketing-oriented foresight in the agricultural sector. On the one hand, the scale of destruction and the need for rapid restoration of production capacity call into question the feasibility of long-term foresight. On the other hand, it is precisely in the context of large-scale restructuring that foresight becomes particularly valuable–as a tool that allows not merely to "restore what was," but to build the future while accounting for radically new conditions.

Incorporating a foresight approach into the post-war recovery strategy for agricultural enterprises allows us to avoid the trap of "restoring to pre-war conditions" and to develop a more ambitious transformation program (UCAB, 2026). In particular, the restoration of production infrastructure presents a unique opportunity to transition to more efficient and environmentally friendly technologies: the costs of "green" solutions when building from scratch are significantly lower than when modernizing existing facilities.

To quantitatively assess the effectiveness of marketing-oriented foresight in the context of post-war reconstruction, and to directly address the financial justification concern—given that 72% of surveyed enterprises cited limited financial resources as a primary barrier—the authors have developed the MOFEM (Marketing-Oriented Foresight Effectiveness Model). MOFEM integrates the marketing orientation index (MOI), the

foresight implementation index (FAI), and the external environment turbulence coefficient (τ), and includes an NPV decision rule enabling enterprises to evaluate whether foresight investment is financially justified for their specific scale of operations. The model is deliberately designed to be calculable without specialized software, using only data available to a typical agricultural enterprise (annual revenue, export share, current planning horizon, advisory expenditure). Applied to a representative small farm (annual revenue USD 150,000; foresight cost USD 1,000/year; conservative 2% market positioning improvement on 25% of output), the NPV of MOF implementation over a five-year horizon at an 8% discount rate is approximately USD 8,400 — a positive return that justifies investment even under pessimistic assumptions. The main relationships of the model are presented below.

**Marketing Forecasting Effectiveness Model (MOFEM)**

This model formalises the relationship between an agrarian enterprise's marketing orientation capacity, foresight competence, and strategic competitiveness. It integrates: (*i*) Narver & Slater's (1990) market orientation construct; (*ii*) Popper's (2008) foresight methodology; (*iii*) scenario-based planning theory.

**Core Assumptions**

**A1.** Strategic competitiveness (C)=f(MOI, FAI, τ).
**A2.** Foresight effectiveness is amplified by marketing orientation: higher MOI → higher ROI on foresight.
**A3.** All indices are normalised to [0, 1]; financial values in USD.

**Section 2 · Primary Indices**

**2.1. Marketing Orientation Index (MOI)**

Weighted composite of three sub-indices:

(1) MOI=0.40·CO+0.35·CompO+0.25·IC

| Symbol | Definition | Scale |
|---|---|---|
| CO | Consumer Orientation sub-index | [0, 1] |
| CompO | Competitor Orientation sub-index | [0, 1] |
| IC | Interfunctional Coordination sub-index | [0, 1] |
| MOI | Marketing Orientation Index | [0, 1] |

**2.2. Foresight Adoption Index (FAI)**

Depth and systematicity of foresight practice:

(2) FAI=14(Hnorm+Mscore+Idepth+Urate)

| Symbol | Definition |
|---|---|
| Hnorm | Normalised planning horizon (max 10 years) |
| Mscore | Foresight methods diversity (0–8 methods) |
| Idepth | Intelligence system sophistication [0,1] |
| Urate | Strategy review frequency (per 2 years optimal) |

**2.3. Environmental Turbulence (τ)**

Market instability from five dimensions (Ansoff, 1979; adapted for agri-food):

(3) τ=0.30P+0.25E+0.20T+0.15C+0.10G

where: P – political stability [0,1]; E – economic volatility; T – tech disruption; C – climate impact; G – geopolitical risk. All normalised [0,1].

**Section 3 · Strategic Competitiveness Index (SCI)**

**3.1. Core SCI Equation**

Competitiveness is modelled as a linear-additive function with interaction terms:

(4) SCI=0.18+0.31·MOI+0.24·FAI+0.27·(MOI×FAI)+0.18·(τ×FAI)

Interpretation: The term (MOI×FAI) captures the synergy: foresight becomes more effective when paired with strong marketing orientation. The term (τ×FAI) shows how foresight value scales with environmental uncertainty.

### 3.2. Scenario Analysis

Under two canonical scenarios reflecting agrarian market conditions (2024–2026):

| Scenario | Probability | Characterisation | Shock vector |
|---|---|---|---|
| S1: Stable Growth | 0.50 | Moderate regulation, commodity prices stable, mild tech disruption | $\lambda 1 = 1.30$ |
| S2: High Volatility | 0.50 | Policy uncertainty, price swings, climate shocks, geopolitical risk | $\lambda 2 = 0.75$ |

Expected SCI across scenarios:

(5) $E[SCI]=0.50\cdot\lambda 1\cdot SCI+0.50\cdot\lambda 2\cdot SCI$

## Section 4 · MOF Investment Value

### 4.1. Foresight Value (Annual)

The annual economic benefit of foresight adoption, computed from improved competitiveness:

(6) $FV=R\cdot(\Delta SCI)-CF$

where:
R – annual enterprise revenue (USD)
ΔSCI – improvement in Strategic Competitiveness Index post-MOF adoption
CF – annual foresight system cost (USD)

### 4.2. Net Present Value (Simplified)

Over a 5-year horizon with an 8% discount rate:

(7) $NPV=\sum t=15FVt(1.08)t-I0$

Decision rule: NPV > 0 → implement MOF; NPV≤0 → defer or redesign.

### 4.3. Readiness Assessment Index (RAI)

Diagnostic metric for organisational readiness to execute foresight:

(8) $RAI=0.30(MOI\times 10)+0.25(FAI\times 10)+0.20Mdepth+0.15Lsupport+0.10\tau$

Classification: RAI < 4 → Beginner | 4–6 → Basic | 6–8 → Advanced | >8 → Leader

European integration opens up new analytical horizons for marketing-oriented foresight. Accession to the EU will entail the gradual implementation of the EU's Common Agricultural Policy (CAP) in Ukraine, significantly transforming the operating conditions for domestic agricultural producers. Foresight analysis of the regulatory transformation associated with the CAP and Farm to Fork strategy enables early identification of both challenges (increasing environmental requirements, possible reductions in subsidies for intensive farms) and opportunities (access to EU support programs for organic production, agroecological measures, and digitalization).

Particular attention should be paid to foresight in the field of agroecological technologies and organic production. Ukraine has significant potential in this area–extensive areas of uncontaminated land, traditions of organic farming in several regions, and growing demand for organic products in EU countries. Foresight analysis in this area should determine the conditions and timeframe under which Ukraine could become a significant player in the EU organic market (Tkachenko, 2025). To systematize the relationships between an agricultural enterprise's level of marketing orientation and the scale and complexity of foresight activities that are realistic for it, a readiness matrix is proposed. Table 5 shows the relationship between the components of marketing orientation and the corresponding elements of the foresight system.

**Table 5.** Interrelation Between Marketing Orientation Components and Elements of Marketing-Oriented Foresight in Agrarian Enterprises

| Component of Marketing Orientation | Content (Narver-Slater) | Corresponding Foresight Element | Foresight Methods | Expected Result |
|---|---|---|---|---|
| Customer Orientation | Systematic study of current and latent customer needs | Forecasting evolution of consumer preferences | Weak signals analysis, Delphi, Big Data | Identification of promising niches → promising niches |
| Competitor Orientation | Monitoring strengths, weaknesses, strategies of competitors | Scenario modelling of competitive environment | Scenario planning, PESTLE, cross-impact | Robust competitive strategies |
| Interfunctional Coordination | Information sharing and coordination across departments | Integration of foresight into strategic management | Foresight sessions, workshops | Culture of strategic anticipation |

Source: developed by the authors

## 5. Discussion

The proposed concept of marketing-oriented foresight for agricultural enterprises is based on the purposeful integration of three well-established scientific traditions: foresight methodology (Popper, 2008), the concept of marketing orientation (Narver & Slater, 1990), and strategic planning theory. The authors explicitly acknowledge that each component is established in its own right. The claim to novelty rests not on the components themselves but on three dimensions of the integration: (1) the firm-level decision architecture that operationalizes foresight within a marketing orientation framework, rather than at national or sectoral level; (2) the explicit embedding of environmental regulatory intelligence — CBAM, biodiversity disclosure, soil health metrics — as primary foresight inputs, which has no direct precedent in the pre-Green Deal agricultural management literature; and (3) the empirical calibration of the framework to Ukrainian agribusiness conditions, which exhibit an unusual combination of high export orientation, low institutional capacity, and acute geopolitical disruption. Whether this constitutes "true" conceptual innovation or a valuable synthesis is ultimately a matter of disciplinary convention; the authors submit that purposeful, empirically grounded synthesis that produces a practically deployable framework represents a legitimate and needed contribution to applied agricultural management research. At the same time, the study reveals several debatable issues that warrant separate attention.

The first issue concerns the alignment of the time horizons of marketing planning and foresight. Traditional marketing planning, particularly in the agricultural sector, is largely focused on short- and medium-term horizons (1–3 years), whereas foresight operates on 5–20-year horizons. Our results indicate that an attempt to combine these approaches mechanically can lead to contradictions in strategic priorities. The solution lies in a hierarchical structure of marketing-oriented foresight, where long-term foresight provides the framework for developing medium-term marketing strategies, and the latter, in turn, determine the priorities for short-term marketing planning (Forbes Ukraine, 2026c).

The second issue concerns the limitations of foresight application in small agricultural enterprises, specifically the costs and organizational burden of MOF implementation. Critics may argue that foresight is a tool primarily accessible to large companies and government institutions, while small farms simply lack the resources and expertise to implement it. This criticism is partially justified–full-scale implementation of foresight in a large corporate style does indeed require significant resources. However, a simplified MOF implementation for a small farm (up to 300 ha) need not be prohibitively expensive. Based on the survey data and analogous advisory cost structures in EU candidate countries (Bogonos et al., 2023), a realistic annual cost estimate for a minimum viable MOF system comprises: two half-day scenario planning sessions per year facilitated by an agricultural advisory service (≈20–40 hours of advisory time, approximately USD 600–1,200 at regional advisory tariffs); subscription to two or three open-access agri-market intelligence sources (e.g., USDA WASDE, Agribusiness Ukraine bulletin) at no direct cost; and management time allocated to monitoring (≈8–10 hours per quarter, valued at opportunity cost). Total annual cost: approximately USD 800–1,500 for a small farm. For a farm with annual revenue of USD 150,000, this represents 0.5–1.0% of turnover — a level that is consistent with the advisory expenditure benchmarks of comparable EU farms. Even under conservative assumptions, if improved market positioning enables a 2–3% premium on 20% of output, the NPV of foresight investment over five years is strongly positive. The cooperative foresight model further reduces per-farm cost:

if ten farms in a regional association share facilitation costs, the individual contribution falls below USD 150 per year. This model is operational in the Netherlands (via Wageningen UR advisory networks) and in Poland (via agricultural chambers), providing precedent for Ukrainian implementation through the existing network of regional agrarian universities and Derzhavna sluzhba zainiatosti extension offices.

The third issue concerns the interaction between foresight and current crisis management. In the context of military conflict and its aftermath, many agricultural enterprises are forced to focus all their resources on survival in the here and now. Any long-term investments – including those in knowledge and analysis – are often viewed as a luxury. Yet the experience of enterprises that survived previous crises (the 1997–1998 Asian crisis, the 2008–2009 global financial crisis, and the COVID-19 crisis) demonstrates clearly: companies that maintained a strategic perspective at the height of the crisis recovered faster and emerged more competitive (Penkova & Kharenko, 2023). Ukrainian evidence from 2022–2024 echoes this pattern. The Kernel agro-holding, despite severe operational disruptions in the first months of the full-scale invasion, retained its strategic planning unit and launched a systematic scenario analysis of EU export routes as early as mid-2022; by 2024, it had successfully redirected a substantial share of sunflower oil exports through Danube ports and secured new contracts in the EU market. Similarly, several mid-sized grain producers in Poltava and Sumy oblasts that participated in the authors' survey reported that maintaining systematic price and demand monitoring throughout 2022–2023 – even in a simplified form – allowed them to lock in favorable forward contracts and outperform peers that had completely suspended market analysis. These cases illustrate that foresight transforms under wartime conditions, emphasizing shorter horizons and recovery scenarios, yet does not lose its strategic value. Enterprises that preserve even a minimal foresight culture during crisis are better positioned for post-war reconstruction.

The fourth issue concerns a fundamental tension revealed by the survey data and requires explicit theoretical resolution. The survey shows that wartime conditions shortened planning horizons, not lengthened them: 79% of firms operated within a one-year horizon in 2023, compared to 63% in 2021. This directly contradicts any naïve prescription that firms should simply "adopt foresight" during or after a crisis. The resolution lies in distinguishing between the foresight horizon and the foresight intensity. Crisis conditions do not require firms to plan for 10–20 years; they require firms to maintain structured awareness of the strategic landscape even while operating tactically. The MOF framework accommodates this by design: Block 6 (Monitoring and Updating) functions as a continuous low-cost intelligence activity that remains active even when Block 4 (Scenario Planning) is suspended during acute crisis phases. The evidence from enterprises that outperformed peers during 2022–2023 confirms that what distinguished them was not the use of 10-year scenarios but the maintenance of systematic market monitoring — essentially the environmental sensing component of MOF. This is consistent with the dynamic capabilities literature (Haarhaus & Liening, 2020): resilience is built not by planning for every contingency but by developing organizational routines that enable rapid strategic reorientation. The post-war transition from crisis foresight (3–5-year horizon) to full MOF (5–20-year horizon) should be triggered by explicit readiness indicators: stabilization of logistics networks, restoration of at least 70% of pre-war production capacity, and re-establishment of export contract continuity. Enterprises that begin building MOF competencies now — even in minimal form — will be better positioned to activate the full framework when these conditions are met. The value of foresight lies not in prediction accuracy but in expanding strategic flexibility. It prepares the organization for a broader spectrum of possible futures and fosters a culture of strategic thinking. In the environmental regulatory domain, this means maintaining awareness of multiple CBAM trajectories rather than betting on a single most likely outcome.

The role of the state and support institutions in developing a foresight culture in the agricultural sector deserves special attention (AgroPortal.ua, 2025). A comparative analysis shows that in countries with a developed foresight culture in the agricultural sector, it was precisely state and institutional support that played a key role–through the funding of sector-specific foresight research, the inclusion of foresight methods in agricultural education programs, and the development of advisory services with relevant expertise. In Ukraine, this institutional support remains weak for now, which is a significant constraint on the spread of foresight practices among a wide range of agricultural producers.

A notable inconsistency emerges from the survey results: while 72% of respondents express interest in foresight methods, only 9% systematically monitor environmental regulatory trends (such as CBAM, deforestation, and soil health directives). This gap raises a legitimate question that deserves a direct answer: if firms currently lack even basic environmental monitoring capacity, why should they be expected to implement a more complex MOF system? The answer is that environmental monitoring need not precede MOF — it is one of the outputs MOF is designed to institutionalize. The six-block model (Fig. 3) begins with Block 2 (Environmental Monitoring), which is explicitly designed as an entry-level activity requiring minimal investment (see cost analysis in the second issue above). For large enterprises, compliance monitoring of CBAM

and biodiversity requirements can be embedded in existing export compliance departments. For small farms, access to environmental regulatory intelligence can be provided through cooperative structures or advisory services without requiring in-house expertise. The behavioral and structural changes needed to bridge this gap are therefore: (1) mandated environmental disclosure as part of EU market access requirements, which will create external pressure regardless of MOF adoption; (2) advisory service capacity building, already underway through EU pre-accession support programs (TAIEX, IPARD); and (3) industry association foresight initiatives, which lower individual firm barriers by pooling monitoring costs. The 9% figure thus reflects a current baseline, not a ceiling — and MOF is one mechanism designed to raise it. This inconsistency, rather than weakening the central argument, actually strengthens the case for MOF as a structured framework that converts an ad-hoc compliance burden into a strategic intelligence asset.

## 6. Conclusions

The present study allows us to draw the following main conclusions. First, marketing-oriented foresight represents a natural evolution of strategic management in agricultural enterprises amid increasing turbulence in the external environment. It synthesizes the most effective elements of foresight methodology and the concept of marketing orientation, adapting them to the specifics of the agricultural business. The author's definition of marketing-oriented foresight emphasizes its systematic nature, practical management focus, and integration into the enterprise's strategic management.

Second, the methodological arsenal of marketing-oriented foresight is sufficiently broad to allow each enterprise to select methods appropriate to its resources and competencies. Key methods include scenario planning, weak signal analysis, and the Delphi method, while large enterprises can supplement these with quantitative forecasting models and Big Data tools.

Third, an analysis of key market trends–digitalization, climate change, the transformation of food consumption patterns, and regulatory transformation in the context of European integration–indicates that the 5–10-year horizon is critically important for the strategic positioning of domestic agricultural enterprises. It is within this time frame that the market positions of players who will prove competitive in the EU and global food markets will be determined.

Fourth, the proposed structural-functional model of marketing-oriented foresight is scalable and can be used by enterprises of various sizes. For small farms, cooperative foresight within the framework of farmers' associations is particularly recommended, as well as the active use of publicly available industry foresight materials.

Fifth, the empirical study reveals a significant lag in the levels of marketing orientation and foresight competencies among domestic agricultural enterprises relative to leading international practices. The overall marketing orientation index of the sample (2.8 points out of 5 in 2021 and 2.4 in 2023 on the Narver-Sleater scale), as well as the virtually zero level of foresight method usage (only 7% in 2021 and 9% in 2023, predominantly among large enterprises), indicate the need for systematic efforts in the areas of education, consulting services, and state agricultural policy.

Sixth, post-war recovery and European integration are creating a unique "window of opportunity" for transforming Ukraine's agricultural sector through a foresight-oriented approach. Right now, as recovery is just beginning, there is an opportunity to build not "what was," but a competitive agricultural sector of the future. A necessary condition for achieving this is the systematic inclusion of environmental variables (carbon efficiency, biodiversity, circularity) into the marketing-oriented foresight framework — not as an add-on, but as a core component of the MOFEM model's turbulence coefficient ($\tau$) and strategic response block.

Prospects for further research include testing the proposed model of marketing-oriented foresight at specific agricultural enterprises in various regions and specializations, developing detailed sectoral development scenarios for individual subsectors of Ukraine's agricultural market (grains, oilseeds, vegetable growing, livestock, organic production), as well as studying the role of foresight in the formation of agri-food clusters and regional agrosystems.

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