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Development of strategic management of a corporation through the implementation of scenario analysis

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Abstract. This study was focused on investigating the impact of scenario analysis on the strategic management process of a corporation to enhance its adaptability and competitiveness. The research examined scenario analysis as a key strategic planning tool in conditions of uncertainty. It included a historical review of the development of the scenario approach, particularly its application within corporations. The main stages of scenario analysis were described: identification of key factors, determination of driving forces of change, formulation of alternative scenarios, their evaluation, and the development of strategic responses. The primary approaches to scenario construction were also discussed, including expert judgement methods, analysis of key factors and trends, stress testing, and system dynamics. As a practical case, the activities of the Ukrainian agricultural company Kernel, operating under high uncertainty caused by geopolitical and economic factors, were studied. The scenario analysis conducted outlines three possible development paths for the company over the next 3-5 years: optimistic (restoration of stability and growth), baseline (adaptation to wartime conditions), and pessimistic (crisis and contraction of operations). For each scenario, the impact of external factors was assessed, key financial indicators were forecast, and strategic recommendations were developed. The findings indicated that using scenario analysis helps companies increase the flexibility of managerial decisions, adapt to unstable environments, and reduce strategic risks. The recommendations proposed for Kernel include diversification of logistical routes, enhancement of operational efficiency, active cooperation with international financial institutions, and development of high value-added products. The practical recommendations developed from the Kernel case can be adapted by other agricultural holdings in Ukraine and worldwide to design scenarios in response to economic challenges

Keywords: risk analysis; forecasting; flexibility; entrepreneurial opportunities; technological trends

Introduction

In an unstable business environment, corporations are compelled to adapt their strategies to rapid market changes, technological breakthroughs, crises, and geopolitical challenges. Traditional strategic planning, based on linear forecasts, often proves ineffective under high uncertainty. Hence, the importance of scenario analysis grows, as it enables modelling alternative development paths, assessing risks, and developing flexible strategies. The application of this tool enhances business resilience and opens new avenues for growth amid globalisation and economic turbulence. The main challenge lies in the qualitative development of scenarios, their adaptation to the company's specifics, and integration into management processes. The question of evaluating the effectiveness of scenario analysis is also relevant. Research in this area holds both theoretical and practical value, contributing to the formation of adaptive strategies and strengthening the competitive positions of businesses.

In strategic management research, many authors have addressed the application of scenario analysis in corporate practice. For instance, D. Settembre-Blundo *et al.* (2021) emphasised the importance of scenarios as a tool for risk assessment and unforeseeable changes, enabling businesses to respond to external challenges. They noted that a clear scenario structure allows companies not only to adapt to future changes but also to proactively create development strategies that increase their flexibility. O. Bugrov *et al.* (2023) argued that scenario analysis helps avoid overreliance on forecasts, which may be inaccurate amid global changes. They stressed the necessity of incorporating unpredictable elements, such as political and social factors, into the scenario creation process. In the work of E. Bekkers & R.B. Koopman (2022), it was demonstrated that scenario analysis significantly reduces uncertainty by creating strategic plans based on alternative scenarios that

can be adjusted in real time. An analysis of the study by V.O. Kuzminykh *et al.* (2024) confirmed that scenario analysis not only enhances strategic precision but also strengthens organisational culture by involving top management in the strategic planning process. This, they claimed, enables companies to reduce risks through more effective uncertainty management.

G. Culot *et al.* (2020) noted that a primary advantage of scenario analysis is the ability to thoroughly examine potential consequences of strategic decisions over the short and long term. S. Andros *et al.* (2021) highlighted that implementing scenario analysis fosters increased innovation within corporations, allowing leaders to consider a broad spectrum of potential outcomes and focus on long-term growth. S. Melnychenko *et al.* (2020) viewed scenario analysis as a tool for assessing probable consequences of global economic and political changes, such as financial crises or geopolitical conflicts. They emphasised that proper use of this tool enables corporations to develop adaptive strategies. According to research by M. McMaster *et al.* (2020), scenario analysis has become a central element of risk management for many international companies. Their work demonstrated that scenario planning allows firms to better assess the impact of global trends on their activities, including demand changes, technological shifts, and regulatory factors. A. Nechyporenko (2024) stressed the enormous potential of scenario analysis in enhancing corporations' strategic flexibility. He pointed out that not only the scenarios themselves but also their integration into the company's overall management strategy are crucial. Research by M.A.K. Harahap *et al.* (2023) noted the significant role of scenario analysis in developing corporate strategy amid globalisation and technological change. Their study showed that the most effective application of scenario analysis occurs when it is integrated with other strategic planning tools.

Thus, the works of these authors demonstrate the importance of scenario analysis for contemporary corporate strategic management. Despite considerable scholarly interest in scenario analysis as a strategic management tool, some aspects require further investigation. Specifically, the practical integration of scenario analysis into management decision-making in large corporations remains underexplored, as do mechanisms for evaluating the effectiveness of its implementation. Additionally, there is limited attention to adapting this approach to the specifics of different industries and exploring potential barriers to its application.

The aim of this study was to determine the role of scenario analysis in corporate strategic management for its implementation. The objectives were: to analyse the conceptual foundations of scenario analysis and its place in strategic management; to identify the key benefits and challenges of implementing scenario analysis in corporate practice; and to develop practical recommendations to improve the effectiveness of strategic planning.

Materials and Methods

This study employed qualitative and quantitative analysis methods to evaluate possible development scenarios for the Ukrainian agricultural company Kernel amid an unstable environment. Kernel was selected for research due to its leading position among Ukrainian agricultural firms and its significant role in international grain and oilseed exports. The company possesses an extensive infrastructure, making it sensitive to changes in macroeconomic and geopolitical conditions. Financial indicator analysis covered the period from 2019 to 2024, allowing for tracking the dynamics of the company's activities before and during crises caused by both internal and external factors.

The primary materials comprised the financial reports of Kernel (2025), analytical reviews of Ukraine's agricultural sector by the Ministry of Agrarian Policy and Food of Ukraine (n.d.), and data from international organisations, notably the World Bank (n.d.) and the International Monetary Fund (n.d.). Geopolitical factors influencing business development were also taken into account, including the impact of military actions, sanctions, and changes in global supply chains. The methodological foundation of the study is based on scenario analysis as a tool for strategic planning. Initially, key factors affecting the company's operations were identified, including macroeconomic indicators (gross domestic product (GDP), inflation, exchange rates), internal business metrics (profitability, liquidity, cost structure), as well as sectoral trends (export dynamics, competition, regulatory changes). Subsequently, an analysis was conducted of the driving forces shaping the company's future development, such as technological innovations, climate change, shifts in trade relations, and access to financing.

The next stage involved developing alternative development scenarios. Three principal scenarios were formulated: optimistic, baseline, and pessimistic. The optimistic scenario envisaged economic stabilisation, recovery of export markets, attraction of foreign investment, and production

growth. The baseline scenario was based on maintaining current risk levels, gradual adaptation of the company to changes, and stabilisation of financial indicators at a moderate level. The pessimistic scenario accounted for a further deterioration of operating conditions, a decline in exports, rising operational costs, and the necessity for asset restructuring. For each scenario, an assessment was carried out of the potential impact of external and internal factors on the company's financial performance. Additionally, sensitivity analysis was applied to identify the most critical parameters influencing Kernel's financial stability. Financial modelling was utilised to quantitatively evaluate the scenarios' effectiveness, based on key indicators such as revenue, Earnings Before Interest, Taxes, Depreciation and Amortisation (EBITDA), net profit, assets, and equity. Extrapolation and regression analysis methods were employed to forecast possible financial outcomes within each scenario.

Thus, a comprehensive approach to scenario analysis, incorporating both qualitative and quantitative methods, enabled the formulation of well-founded recommendations for adapting Kernel's business strategy. The use of diverse analytical approaches enhances forecast accuracy and enables company management to prepare for potential changes in the external environment.

Results

In an environment characterised by rapid change and high uncertainty, corporations face constant challenges complicating strategic planning. The rapid development of technology, globalisation, economic crises, legislative changes, social transformations, and environmental challenges – all these factors render traditional forecasting methods less effective. Strategic management has often relied on extrapolating historical data; however, this approach is becoming increasingly irrelevant in a world where the future is unpredictable. Hence, scenario analysis is gaining importance as a tool that helps corporations not merely react to change but proactively prepare for various possible developments.

Scenario analysis is a strategic planning method involving the construction of plausible alternative future scenarios and analysing their impact on organisational activity. The primary aim is not to predict exact outcomes but to define a range of potential situations for which the company must be prepared (Salimi *et al.*, 2021). Unlike traditional forecasting methods based on a single most probable scenario, scenario analysis accounts for multiple potential futures. A key aspect of scenario analysis is its non-linearity. Whereas classical forecasting seeks to predict the future based on current trends, the scenario approach assumes that the future may be ambiguous and dependent on numerous interrelated factors. It is important not only to consider possible threats but also to identify hidden opportunities that may arise in various scenarios.

The scenario analysis method was originally applied in military planning. Its concept began to take shape during the Second World War (1939-1945), when analysts used different campaign developments to inform

strategic decisions. However, in business management, scenario analysis gained prominence in the 1960s and 1970s due to the work of American futurist Herman Kahn, who first applied scenario forecasting to global risk analysis (Campa, 2023). Further development occurred at Royal Dutch Shell, where, thanks to Pierre Wack and his team, scenario analysis became a core element of strategic management. This approach helped the company successfully adapt to the 1973 oil crisis, when a sudden rise in oil prices caused significant economic upheaval. While most competitors relied on stable forecasts, Shell anticipated possible market volatility and prepared appropriate strategies, enabling it to maintain competitive advantages (Cornelius *et al.*, 2005). Since then, scenario analysis has been widely adopted not only in the energy sector but also in finance, automotive, technology, and other industries where flexible future management is critical.

The scenario analysis process consists of several key stages. First, the main external and internal factors affecting the corporation's activities are identified. These may include macroeconomic indicators, technological trends, legislative changes, competitor behaviour, and more. Both obvious factors, such as demand fluctuations, and less apparent influences, such as social or environmental transformations, should be considered. Next, the primary driving forces of change most significant to future developments are determined. For example, in the automotive industry, key drivers might include vehicle electrification, artificial intelligence advancements, and changes in environmental legislation (Kubiczek & Hadasik, 2021). Following this, alternative future scenarios are developed, typically divided into optimistic, pessimistic, and baseline (most likely) cases. Occasionally, extreme scenarios are also created to account for unlikely but impactful events. The next step involves assessing the consequences of each scenario and devising strategic responses. It is important not only to identify risks but also to uncover new opportunities arising from change. The final stage includes ongoing monitoring and regular updating of scenarios, as the business environment continuously evolves, requiring companies to adjust their strategies accordingly.

Scenario analysis offers several significant advantages. Firstly, it reduces uncertainty by enabling preparation for different possible futures and minimising risks. Secondly, it promotes strategic flexibility, allowing corporations to adapt their plans to a changing environment. Thirdly, it improves the quality of managerial decisions by providing top executives with deep analyses of potential scenarios. Lastly, companies employing scenario analysis typically achieve greater competitiveness, as they are better prepared for market challenges than those relying solely on traditional forecasting methods (Mietzner & Reger, 2005). However, scenario analysis also has limitations. Scenario development heavily depends on expert judgement, which can introduce subjectivity. The process is complex and demands considerable analytical resources and time. Moreover, even the best scenarios cannot encompass all possible future

developments, representing an inherent drawback of the method (Wright *et al.*, 2019).

The main methodological approaches to scenario analysis may vary depending on the company, industry, and market context. Nevertheless, scenario construction and impact analysis commonly employ several core approaches. One widespread method is expert elicitation, which involves a panel of experts from various fields analysing key factors influencing future developments. Experts provide assumptions about possible event trajectories, enabling the creation of multiple scenario options. This approach has the advantage of incorporating diverse perspectives and expertise but carries a degree of subjectivity that may affect analysis accuracy (Makedon *et al.*, 2019).

Another important method is the "key factors and trends" approach, which involves identifying and assessing crucial macro- and micro-factors determining future developments. This includes pinpointing key trends – such as economic shifts, technological advancements, political changes, or social movements – that may significantly impact the business. This method facilitates deeper analysis of external influences and supports scenario development based on these factors (Makedon *et al.*, 2024). A novel and promising approach is "stress testing", which evaluates how different business strategies and organisational models withstand extreme or crisis conditions. This process is particularly vital for large corporations with complex operational structures. The method helps identify potential vulnerabilities in company strategies and business models, aiding preparation for unexpected shocks (Linkov *et al.*, 2022).

In turn, the "system dynamics" method leverages mathematical models to analyse intricate interrelationships among various systems and factors. This approach enables the study of long-term trends and the system's response to changes in different variables. It helps forecast potential consequences of strategic decisions by integrating data from diverse sources and allows the creation of more complex and detailed models of event development (Schwaninger & Grösser, 2020). Each of these approaches has its advantages and limitations, but their combination makes it possible to develop more comprehensive and well-founded scenarios that assist in strategic management. Moreover, it is important to note that scenario analysis is a flexible tool that can be adapted to the specific conditions of a company and its industry.

Scenario analysis differs significantly from other strategic forecasting methods. One of the main approaches to strategic forecasting is trend extrapolation, which is based on analysing current trends and assuming that they will continue into the future. However, this method has significant limitations because it does not account for the emergence of new, unpredictable factors or changes in conditions that may substantially affect the course of events (Li *et al.*, 2022). Unlike trend extrapolation, scenario analysis is not limited to a single linear forecast but considers a multitude of possible developments, which helps reduce risks associated with unforeseen changes.

Another common method is PEST analysis (Political, Economic, Social, and Technological factors), which focuses on the macroenvironment and examines broad societal and economic trends. This method is well suited for identifying general factors that may influence the development of an industry or market. However, its drawback is that it usually does not provide specific scenarios for event development and is less flexible in forecasting crises or unpredictable changes. Scenario analysis, on the other hand, allows consideration of a wider range of options and helps develop more specific strategies for different future conditions.

The SWOT analysis method, which involves identifying a company's strengths, weaknesses, opportunities, and threats, is another popular strategic forecasting tool. This method helps understand the current state of the enterprise and its market position, but it often focuses on internal factors and does not consider complex interactions with external factors. Unlike SWOT, scenario analysis helps incorporate a larger number of external variables and potential future situations, allowing more flexible strategy adaptation

(Li et al., 2022). Compared to the sensitivity analysis method, which examines changes in a few critical variables to assess their impact on the business, scenario analysis is more flexible and diverse. Since it is not focused on only one or several factors but considers a broad range of possible outcomes, it provides a more comprehensive picture and enables companies to prepare for multiple possible futures.

Thus, scenario analysis is a powerful tool that offers greater capabilities for anticipating different development options, reducing risks, and strategically preparing for unpredictable changes in the external environment. It significantly surpasses other forecasting methods in terms of flexibility, consideration of multiple options, and potential risks.

Kernel company has a significant vertical integration that allows it to control all stages of the production process – from raw material cultivation to the final product. Kernel owns substantial land resources in Ukraine and also has facilities for processing and storing agricultural products. An important element of Kernel's activity is export. Table 1 presents the company's key financial indicators.

Table 1. Kernel's key financial indicators for 2019-2024, USD million

Indicators	2019	2020	2021	2022	2023	2024
Revenue	3.992	4.107	5.647	5.332	3.455	3.581
EBITDA	346	443	929	220	544	381
Profit	178	123	643	-41	299	168
Assets	2.463	3.165	3.997	4.186	3.885	3.397
Equity	1.346	1.494	2.083	1.687	1.744	1.866

Source: compiled by the authors based on Kernel (2025)

An analysis of Kernel's financial indicators reveals instability linked to external factors, notably the war, logistical challenges, and market volatility. The company's revenue grew until 2021, after which it began to decline due to export restrictions and logistical difficulties. EBITDA also peaked in 2021 (USD 929 million) but sharply fell in 2022 (USD 220 million), signalling a decline in business profitability amid the crisis. The company's profit fluctuated, reaching its highest point in 2021 (USD 643 million) but incurred losses in 2022 (USD -41 million), which can be attributed to the impact of the war and operational challenges. Kernel's assets increased until 2022 (USD 4,186 million) but then started to decrease, possibly indicating asset sales or revaluation. Meanwhile, Kernel's equity demonstrates relative stability, having recovered following a decline in 2022. These trends suggest that the company has endured a difficult period but has managed to partially adapt, stabilise its financial metrics, and gradually restore profitability in 2023–2024.

One of the company's main challenges is the geopolitical situation in Ukraine, especially in the context of the conflict that began in 2014 and sharply escalated in 2022. This conflict has profoundly altered the economic environment for agribusiness, particularly for large companies like Kernel, whose operations depend directly on stable raw material supplies and the secure transportation of products. The war has disrupted logistics chains, blocked seaports, destroyed infrastructure, and caused significant

problems in transporting grain and oil, all of which have seriously affected the company's financial results.

Due to the armed conflict, many key agricultural regions in Ukraine have been threatened or are directly within combat zones, raising doubts about the feasibility of growing and harvesting crops in these areas. Moreover, the blockade of ports on the Black Sea has complicated product exports, especially of grain. This has forced the company to seek alternative transport routes, including through Ukraine's western borders. Against the backdrop of war, Kernel is also facing instability in the domestic market, where the economic situation remains challenging. The conflict has led to inflation, national currency devaluation, and a reduction in purchasing power. All these factors make conducting business in Ukraine riskier and impact domestic consumption levels as well as the availability of credit resources for company development.

Nonetheless, despite these difficulties, Kernel continues to be one of the largest agribusiness companies in Ukraine. The company is actively adapting to new conditions, including through the diversification of its operations, seeking new sales markets, and strengthening its position in international markets. Furthermore, significant investments are being made in modernising production facilities and technologies to improve efficiency and reduce costs.

Another important challenge is the climatic conditions and seasonal fluctuations in crop yields, as the

agribusiness is heavily dependent on weather. In the event of adverse weather conditions (drought, frost, or excessive rainfall), the company may suffer substantial losses due to reduced agricultural output. Despite the challenging domestic market, Kernel continues to actively operate on the international stage, aiming to minimise risks through market diversification. The company is working to strengthen its presence in countries across Europe, Asia, and the Middle East, thereby reducing dependence on any single group of consumers. Kernel, as one of Ukraine's largest agro-industrial holdings, operates amid high uncertainty caused by the geopolitical situation, economic instability, logistical constraints, and global fluctuations in agricultural commodity prices. Based on an analysis of its financial indicators from 2019 to 2024, three main development scenarios for the next three to five years can be outlined: optimistic, base, and pessimistic.

The optimistic scenario ("Development through Stabilisation") envisages a significant improvement in the external business environment. A key factor driving this outcome could be the end of the war, or at least a reduction in the intensity of hostilities, that enables the restoration of exports through seaports. Such an event would radically change the situation for the company, as current logistical constraints – particularly costly overland exports via the EU – reduce business profitability. An additional positive factor might be a global rise in grain and oil prices, which would ensure higher profits for Kernel even with unchanged production volumes. A vital element of this scenario would be increased investment in modernising elevator capacities, transport infrastructure, and the production of high value-added products. Under these conditions, the company could return to revenue levels exceeding USD 5.5 billion, with EBITDA rising to between USD 800 million and USD 1 billion, substantially strengthening its financial resilience. Profitability is expected to rebound to over USD 500 million annually, allowing Kernel to restore international investor confidence, attract new financial resources, and expand its activities in global markets.

The base scenario ("Adaptation to Wartime Conditions") assumes the continuation of the current situation, with the war ongoing but exports remaining partially possible via alternative routes, including the grain corridor and rail transport through the European Union (EU). At the same time, the company must adapt to higher logistical costs, significantly reducing operating margins. In this scenario, global prices for grain and oil remain at moderate levels, while Kernel focusses on cost optimisation and improving production efficiency. This strategy allows it to maintain relative financial stability, albeit without significant growth. Company revenues would remain around USD 3.5-4 billion, EBITDA would fluctuate between USD 400 million and USD 600 million, and net profit would range from USD 150 million to USD 300 million. Asset sales may occur to preserve liquidity and finance operating activities. The base scenario foresees that the company can hold its market position, but significant development is unlikely until the war ends and full seaborne trade resumes.

The pessimistic scenario ("Crisis and Contraction") is the most threatening for Kernel and assumes further escalation of the war, potentially resulting in a complete blockade of maritime exports and a sharp decline in global grain prices. In this situation, the company faces a significant drop in revenue, rising costs, and an inability to compete effectively in the international market due to high production costs. This scenario may also involve new government restrictions or additional tax burdens, further complicating business operations. Consequently, the company could lose a substantial market share, with revenues falling to USD 2.5-3 billion, EBITDA shrinking to USD 150–300 million, and profitability turning negative, with losses reaching USD 50 million or more. Such an outcome would force Kernel to sell assets, scale down production, and potentially reconsider its business model. In the worst-case outcome, partial bankruptcy or debt restructuring could occur, leading to a loss of leadership in the sector. Table 2 presents the key results of the company's scenario analysis.

Table 2. Scenario analysis of Kernel's development

Factor	Optimistic scenario ("Development through stabilisation")	Base scenario ("Adaptation to wartime conditions")	Pessimistic scenario ("Crisis and contraction")
Geopolitical Situation	End of the war or significant reduction in hostilities. Restoration of stability	Prolonged war, but maintenance of the grain corridor and land exports	Escalation of war, full blockade of ports, increased military risks
Logistics	Resumption of exports via the Black Sea, reduced transportation costs	Partial reliance on alternative routes (Romania, Poland)	Export difficulties, high costs, possible closure of enterprises
Product Prices	Global rise in prices for grain and oil, increased demand	Moderate prices allowing for maintained profitability	Sharp drop in global prices, making profitable export impossible
Financial Indicators	Revenue over USD 5.5 billion, EBITDA USD 800-1,000 million, profit over USD 500 million	Revenue USD 3.5-4 billion, EBITDA USD 400-600 million, profit USD 150-300 million	Revenue USD 2.5-3 billion, EBITDA USD 150-300 million, possible losses up to USD -50 million
Market and Competition	Market share recovery, expansion of international operations	Maintaining positions, operating under intense competition	Loss of market share, contraction of operations, possible exit from some markets

Table 2, Continued

Factor	Optimistic scenario ("Development through stabilisation")	Base scenario ("Adaptation to wartime conditions")	Pessimistic scenario ("Crisis and contraction")
Investments	Active investor engagement, production modernisation	Partial financing for capacity upgrades, cost optimisation	Investment cuts, asset sales to maintain liquidity
Human Resources Policy	Staff expansion, creation of new jobs	Retention of key employees, limited expansion	Staff reductions, possible workforce restructuring

Source: compiled by the authors based on Kernel (2025), Ministry of Agrarian Policy and Food of Ukraine (n.d.), World Bank (n.d.), International Monetary Fund (n.d.)

Kernel must implement a strategy of flexibility and adaptability to effectively respond to any possible scenarios. One of the key directions is diversifying logistics, since dependence on the Black Sea ports remains risky due to the ongoing war. The company needs to more actively develop alternative export routes along western borders, utilising railway infrastructure to deliver products to ports in Poland, Romania, and the Baltic countries. Establishing its own trans-shipment facilities in EU ports could significantly reduce transportation costs and mitigate logistical risks. Equally important is improving operational efficiency. Kernel should invest in technological upgrades for elevators and processing plants, optimise supply chains, and implement digital technologies for monitoring operational performance. Reducing unproductive expenses, reorganising internal processes, and adopting modern management practices will help increase profitability even under challenging conditions. The company's financial stability largely depends on active engagement with international partners. Kernel must strengthen cooperation with the European Bank for Reconstruction and Development (EBRD), the World Bank, and other financial institutions to secure long-term financing. Additionally, the sale of stakes in certain assets may be considered a way to raise additional capital, ensuring liquidity and stable operations.

Reducing dependence on raw material exports is also a strategically important task. Kernel should develop the production of high value-added products, particularly refining and packaging oil, to enhance competitiveness in international markets. Investing in biofuel or animal feed production will diversify the business model, and utilising agricultural waste for energy generation will help reduce dependence on external resource suppliers. Finally, strategic flexibility and adaptability must become the foundation of long-term planning. Kernel should develop multiple scenarios for possible developments and respond swiftly to changes in the external environment. Creating alternative business plans, expanding partnerships with international traders, diversifying funding sources, and accumulating reserve funds will enable the company to act effectively even in unpredictable conditions. Thanks to these measures, Kernel will maintain its market position and lay the groundwork for stable future growth.

Scenario analysis allows Kernel to forecast potential risks and opportunities amid uncertainty. The most realistic scenario at present is the baseline scenario, which

assumes continuation of the war but retention of partial export capabilities through alternative routes. However, the company must be prepared for both a pessimistic scenario, which requires strict cost optimisation, and an optimistic scenario, which enables active investment in development. To ensure stability, Kernel must expand logistical capabilities, improve production efficiency, attract international financing, develop processing, and maintain strategic flexibility. These actions will allow the company not only to adapt to current conditions but also to secure long-term growth despite challenges.

Discussion

The study results indicate that in unstable environments, traditional strategic forecasting methods become less effective, highlighting the importance of scenario analysis. Global challenges such as rapid technological changes, economic crises, legislative shifts, environmental issues, and social transformations significantly complicate long-term planning. At the same time, scenario analysis enables companies not only to respond to changes but also to be proactive in developing strategies for various possible future scenarios. F. Khosravi & U. Jha-Thakur (2019) investigated the effectiveness of scenario analysis under high uncertainty, particularly in financial and technological sectors. They demonstrated that this approach helps companies adapt to changes and make more informed strategic decisions, though it does not always allow predicting all potential risks, especially amid rapid technological development. S. Chinta (2021) emphasised the importance of integrating scenario analysis with forecasting algorithms and machine learning to improve prediction accuracy. Their approach somewhat differs from the current study, which focuses more on macroeconomic and geopolitical risks, notably the consequences of the war in Ukraine for the agricultural sector. M. Kitsing (2022) examined the role of geopolitical risks in corporate strategic planning, particularly in the energy sector. He found that companies actively using scenario analysis respond faster to changes and minimise losses. His findings align with those in the current study, especially regarding international politics and regulatory impact. However, the present study places more emphasis on logistics and financial aspects.

A main part of scenario analysis is that it doesn't follow a straight line and looks at different possible future paths, which helps lessen uncertainty and get ready for possible

risks and chances (Prokhorova *et al.*, 2025). This method differs from traditional approaches such as trend extrapolation, PEST analysis, or SWOT analysis by offering a deeper analysis of external and internal factors affecting the business. V. Cerqueira *et al.* (2020) also compared scenario analysis with other forecasting methods, concluding that traditional methods often fail to account for sudden changes and can be less effective for long-term planning. This corresponds with the current study's results, which also note that scenario analysis allows for anticipating unexpected events. However, unlike some authors who dismiss classical methods as outdated, the current study acknowledges their usefulness in specific contexts.

Methodological approaches to scenario analysis indicate that the most effective methods include expert assessments, key factors and trends analysis, stress testing, and system dynamics. Each method has strengths and limitations, but their combination provides a comprehensive view of future opportunities and threats. For example, expert assessments expand perspectives on possible scenarios but contain subjective bias that can introduce errors (Teymurova *et al.*, 2024). Conversely, the "key factors and trends" method enables more structured evaluation of macro- and microeconomic influences. B.S.K. Patnam & N.M. Pindoriya (2021) approached scenario analysis from a mathematical modelling perspective, exploring how quantitative methods, including stochastic modelling and simulation forecasting, could improve scenario planning accuracy. F. Ackermann & C. Eden (2020) demonstrated that formal methods significantly increase the justification of strategic decisions, particularly in fields where risks can be assessed from historical data. The current study also mentions system dynamics but focuses more on combining qualitative and quantitative approaches. Thus, the authors' approach is more formalised, whereas this study prioritises flexibility and adaptability to real-world conditions. A. Fergnani (2022) researched the role of scenario analysis in strategic management of large corporations in unstable markets, finding that companies that regularly update their scenarios and actively involve experts achieve better long-term results. His approach aligns with the current study's emphasis on adaptive scenario analysis but focuses more on internal corporate decisions, while this study stresses external risks.

Analysis of Kernel's operations shows it functions in a highly uncertain environment, especially considering geopolitical factors, logistical challenges, and market instability. The company's financial results fluctuate significantly, illustrating the need for a flexible strategic approach. Developing three scenarios-optimistic, baseline, and pessimistic-allows an assessment of potential developments and preparation for various challenges. The optimistic scenario assumes external stabilisation enables export recovery and investment growth. The baseline scenario focuses on adaptation and risk minimisation to maintain relative stability. The pessimistic scenario foresees further deterioration, possibly leading to reduced operations and

fundamental business model changes. This approach helps company leadership set strategic priorities and select the most effective management decisions. B. Gajdzik & R. Wolniak (2021) studied scenario analysis's use during economic crises, analysing how automotive companies employed it during the 2008 financial crisis and the COVID-19 pandemic. They found that companies considering even extreme scenarios adapted faster. This aligns with the current study's conclusions, which also examine crisis scenarios related to war and export restrictions. However, those authors focused more on global financial shocks, while this study emphasised regional geopolitical risks.

An important aspect is that scenario analysis helps respond to risks and opens up new business opportunities. For example, the diversification of logistics routes, the development of products with higher added value, and the implementation of advanced technologies can significantly strengthen a company's position, regardless of the development scenario (Shahini & Shtal, 2023; Hlushko, 2024). In addition, cooperation with international financial institutions and expanding presence in international markets can help mitigate the impact of local risks. R. Ranjan (2025) examined how scenario analysis influences investment decision-making in the banking sector. His study showed that financial institutions that actively use this method allocate risks more effectively and respond to crises in a timely manner. These findings partially align with the results of the present study, which also highlight that companies applying scenario analysis can manage their finances more efficiently. However, the key difference lies in the fact that R. Ranjan focused exclusively on financial institutions, while the present research examines the real economy, specifically the agricultural sector. R. Hinz *et al.* (2020) investigated the use of scenario analysis in forecasting agricultural production under conditions of climate change. They demonstrated that this method enables a more accurate assessment of the potential consequences of weather-related disasters, supply chain disruptions, and changes in international agricultural markets. Their conclusions partially overlap with those of the present study, which also explores instability in supply and export chains. However, the main distinction is that their focus was predominantly on environmental aspects, whereas the current study emphasises political and economic factors. Thus, the findings of this research confirm that scenario analysis is a powerful strategic management tool, particularly under conditions of high uncertainty. Its application allows not only for forecasting possible developments but also for developing adaptive strategies that ensure business resilience in the long term.

Conclusions

In a context of rapid change and high uncertainty, companies face numerous challenges that complicate the strategic planning process. Traditional forecasting methods are losing effectiveness, while scenario analysis is gaining increasing popularity as a tool for proactive preparation for potential

changes. Compared to other forecasting methods, the scenario-based approach offers a considerable advantage as it enables consideration of multiple development paths, thereby reducing the risks associated with unpredictable changes. Scenario analysis helps not only to respond to changes but also to prepare for them proactively.

The analysis of the agri-industrial company Kernel demonstrates that it is one of the key players in Ukraine's agricultural market, yet it is also significantly affected by external factors such as war, economic instability, logistical constraints, and fluctuations in global prices for grain and oilseeds. Kernel's financial performance from 2019 to 2024 shows both periods of growth and significant challenges. In particular, up until 2021 the company experienced stable revenue growth, reaching USD 5,500 million, but in 2022 this figure fell to USD 3,500 million due to export restrictions and logistical difficulties. Net profit in 2021 stood at USD 643 million, while in 2022 the company incurred a loss of USD 41 million. Despite these difficulties, the financial indicators for 2023-2024 reflect a gradual recovery, indicating the company's ability to adapt to challenging conditions. The scenario analysis of Kernel's development identified three main future trajectories. The optimistic scenario ("Growth through Stabilisation") assumes a reduction in hostilities, the reopening of Black Sea ports, and an increase in global prices for grain and oil. This could result in revenue exceeding USD 5,500 million, EBITDA rising to USD 800-1,000 million, and net profit exceeding USD 500 million. The baseline scenario ("Adaptation to Wartime Conditions") anticipates ongoing conflict, continued logistical restrictions, and the need to export through alternative

routes. In this case, revenue is expected to remain in the range of USD 3,500-4,000 million, EBITDA at USD 400-600 million, and net profit at USD 150-300million. The pessimistic scenario ("Crisis and Contraction") includes a worsening of the war, a complete blockade of maritime routes, and a decline in global agricultural prices. This could lead to revenue falling to USD 2,500-3,000 million, EBITDA to USD 150-300 million, and net losses exceeding USD 50 million, forcing the company to reduce assets and reconsider its business model.

To ensure stability and further development, Kernel should focus on diversifying logistics routes, increasing operational efficiency, attracting international financing, developing value-added processing, and implementing flexible strategic planning. These measures will allow the company to reduce risks, enhance competitiveness, and secure long-term growth even under adverse conditions. The limitations of this study include the potential subjectivity in scenario formulation and the constraints related to the availability of data. Future research could focus on improving scenario analysis methods by incorporating new technologies and global trends, as well as examining the impact of instability factors on corporate strategies.

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Розвиток стратегічного управління корпорацією через впровадження сценарного аналізу

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Анотація. Робота направлена на дослідження впливу сценарного аналізу на процес стратегічного управління корпорацією для її підвищення адаптивності та конкурентоспроможності. У дослідженні розглядався метод сценарного аналізу як ключового інструменту стратегічного планування в умовах невизначеності. Дослідження охоплювало історичний аналіз розвитку сценарного підходу, зокрема його застосування в корпораціях. Описано основні етапи сценарного аналізу: ідентифікація ключових факторів, визначення рушійних сил змін, формування альтернативних сценаріїв, їх оцінка та розробка стратегічних відповідей. Також розглянуто основні підходи до побудови сценаріїв, зокрема метод експертних оцінок, аналіз ключових факторів і трендів, стрес-тестування та системну динаміку. Як практичний кейс досліджено діяльність української аграрної компанії Kernel, що працює в умовах високої невизначеності, спричиненої геополітичними та економічними факторами. Проведений сценарний аналіз включав три можливі варіанти розвитку компанії на найближчі 3-5 років: оптимістичний (відновлення стабільності та зростання), базовий (адаптація до воєнних умов) та песимістичний (криза та скорочення діяльності). Для кожного сценарію оцінено вплив зовнішніх чинників, прогнозовано ключові фінансові показники та розроблено стратегічні рекомендації. Результати дослідження засвідчили, що використання сценарного аналізу допомагає компаніям підвищити гнучкість управлінських рішень, адаптуватися до нестабільного середовища та зменшити стратегічні ризики. Запропоновані рекомендації для Kernel включають диверсифікацію логістичних маршрутів, підвищення операційної ефективності, активну співпрацю з міжнародними фінансовими інституціями та розвиток продуктів із високою доданою вартістю. Практичні рекомендації, розроблені на прикладі Kernel, можуть бути адаптовані іншими аграрними холдингами України та світу для розробки сценаріїв у відповідь на економічні виклики

Ключові слова: аналіз ризиків; прогнозування; гнучкість; підприємницькі можливості; технологічні тренди
