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Adaptation strategies and resilience models for Ukrainian enterprises in times of crisis and martial law

Abstract. In the context of Russian full-scale armed aggression against Ukraine – unprecedented since the country's independence – traditional management approaches have proved ineffective, creating an urgent need to explore new mechanisms for business survival. The transformation of enterprises under the influence of extreme uncertainty is becoming a decisive factor not only for preserving the country's economic potential but also for its future recovery. The study aimed to conduct a comprehensive analysis of the adaptation tools used by Ukrainian companies during the period of martial law, which has been in force since 2022, and to develop a scientifically grounded model for enhancing their viability. The research was based on the application of a systematic approach, classification methods and a comparative analysis of the evolution of scientific views on economic stability within the framework of the "conflict continuum" concept. The study identified key vectors of business transformation, covering the operational, financial and technological spheres. The study demonstrated that adaptive capacity acts as a fundamental mediator that directly shapes the overall resilience of an organisation. It has been established that cost optimisation has become a strategic imperative, compelling management to implement flexible budgeting, energy autonomy and lean manufacturing methods. Asset relocation has been identified as a key component of resilience; with the support of government programmes, it can be used for production cycle to be maintained in safe regions. Digital transformation, which ensures cyber resilience and business continuity in hybrid environments, has been given particular attention. The role of alternative funding sources, such as grants and risk-sharing, in supporting business solvency has been highlighted. The authors proposed a generalised model that integrates strategic flexibility, decentralised decision-making and scenario planning as the basis for crisis management. The recommendations and developed models can be used by business leaders to adjust their crisis management plans, as well as by government authorities when developing programmes to support and stimulate investment in the post-war period

Keywords: entrepreneurial resilience; relocation; cost optimisation; digitalisation; cyber resilience; alternative financing; risk sharing

INTRODUCTION

The full-scale military aggression launched by Russia against Ukraine in February 2022 has caused the greatest geopolitical disruption to the global economy of the 21st century. S.V. Korobka (2023), based on an analysis of the destructive impact of the war on macroeconomic indicators, demonstrated that the cumulative losses led to a reduction in the country's gross domestic product by more than a third. The author highlighted the correlation

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between the destruction of production capacity and the sharp decline in economic activity for further analysis of the scale of the real losses suffered by the Ukrainian economy. As noted by A.S. Alshebami (2025), in this context, the study of organisational adaptation and entrepreneurial resilience in Ukrainian business takes on paramount scientific and practical relevance.

Traditional business management models, designed for peacetime and economic stability, have proved ineffective in the context of unprecedented challenges such as military aggression. Enterprises have faced not only physical destruction and loss of resources, but also extreme uncertainty, requiring a shift towards qualitatively new, flexible anti-crisis management strategies. The range of responses by Ukrainian enterprises to wartime challenges varies from passive resource conservation to active innovative transformation. V. Korolkov *et al.* (2025) noted that different models of adaptive behaviour are determined by the level of risk, sector-specific characteristics, geographical location and available resources. According to I.O. Bobyliev & N.M. Chupryna (2025), the analysis of adaptive strategies in wartime is relevant as it can be used for formulation of recommendations that enterprises can utilise in critical situations, whilst also contributing to the overall development of resilience theory in conditions of instability. E. Berthelsen (2025) noted that contemporary scientific approaches to the study of conflict are increasingly moving away from the dualistic opposition of "peace versus war" in favour of the concept of a conflict continuum. Organisations operate in an environment of constant strategic competition and hybrid threats; therefore, adaptation is not a one-off crisis response but a continuous process of organisational change aimed at gaining or maintaining competitive advantages. The core concepts in adaptation research are adaptive capacity (AC) and entrepreneurial resilience (ER). Study by by A.S. Alshebami (2025) on micro and small enterprises in times of crisis confirmed that AC acts as a mediator that has a positive and significant impact on ER. Factors that enhance AC include crisis management preparedness and customer-centric adaptation.

The constant pressure of military and economic challenges is transforming the process of adaptation into a powerful driver of innovation and structural change. Rather than being a reaction to disruption, adaptation is driving the implementation of effective cost management and innovative technological and organisational solutions. This, according to D. Sarwar & S. Rye (2025), leads to permanent changes in the configuration of global supply chains and trade relations, which are expected to persist even after the conflict has ended. Thus, as argued by O. Karintseva *et al.* (2025), successful adaptation strategies require a combination of rapid tactical response and long-term strategic planning. The study aimed to conduct a comprehensive analysis of the adaptation strategies of Ukrainian enterprises during the period of martial law, to identify factors of resilience, and to develop scientifically grounded approaches to strengthening business resilience in the context of wartime and post-war transformations.

The study goals included:

- to systematise theoretical and methodological approaches to the adaptation of Ukrainian enterprises in times of crisis and war, and to clarify the role of resilience and digital transformation models in ensuring their sustainability;
- to analyse the adaptation strategies of Ukrainian enterprises and assess the impact of government programmes, grant support, international financial organisations and risk-sharing instruments on their financial stability and viability;
- to develop and justify a generalised model of adaptation strategies, identifying priority areas for their optimisation to strengthen business resilience.

LITERATURE REVIEW

There is growing interest in the academic literature in researching economic resilience in the context of hybrid conflicts, which combine traditional military threats with cyberattacks, disruptions to supply chains and the need for institutional adaptation. Indeed, modern armed conflicts pose unique economic challenges, and Russian full-scale aggression against Ukraine has provided a case study for analysing the mechanisms of survival and recovery of economic systems under conditions of uncertainty.

Regional conflicts are no longer isolated issues; instead, they have a rapid and negative global impact, forcing organisations to review their risk management strategies. L. Bednarski *et al.* (2023) and D. Sarwar & S. Rye (2025) highlighted that geopolitical conflicts create systemic vulnerabilities and cause large-scale disruptions in critical supply chains, which immediately affect the global economy. E. Berthelsen (2025) argued that modern conflict requires businesses to adopt so-called "hybrid times", where strategies of war and peace must be applied simultaneously, forcing organisations to review their fundamental processes.

Research into the impact of war on the economy has undergone a significant evolution. Macroeconomic studies from 2018 to 2020 focused primarily on the overall impact of conflicts, analysing the dependence of growth on imports (Bonfatti & O'Rourke, 2018) and the long-term effects of war on economic development (Thies & Baum, 2020). These studies laid the foundation for analysis of macroeconomic vulnerability. However, after 2022, the focus shifted significantly from diagnosing macroeconomic factors to practical planning for resilience at the micro level. Work since 2022 has centred on operational survival tactics, such as relocation (Korobka, 2023), and the latest management models specifically adapted to conditions in Ukraine (Varakin *et al.*, 2024). This shift from the analysis of passive variables (dependence, growth) to active management variables (adaptive leadership, relocation) indicates a paradigm shift: academic attention has moved from vulnerability assessment to the study of AC (Zelisko, 2023; Alshebami, 2025). This transformation reflects the

evolution of crisis management, aimed not only at survival but also at sustainable functioning under conditions of constant threat. This trend is consistent with the findings of I. Pokromovic *et al.* (2022), showing that business resilience is formed through a combination of organisational, strategic and financial components.

Strategic management in highly turbulent environments is given significant attention in the literature. For instance, I.O. Bobyliev & N.M. Chupryna (2025) addressed strategic management models that can be used by enterprises to navigate an extremely volatile environment, emphasising the need for hybrid approaches. I. Pokromovica (2025) emphasised that changes in global and national economic indicators, in particular gross domestic product, inflation, unemployment and production volumes, correlate with indicators of enterprise resilience. This indicates that, in the context of significant fluctuations in these economic indicators caused by crisis phenomena, corresponding changes in the level of enterprise resilience occur. In this regard, according to the authors, to accurately assess corporate resilience, it is advisable to cover specific characteristics of the Ukrainian economy, the extent of its integration into the global economic space, as well as the nature and intensity of external shocks.

A substantial element of management in crises is the role of leadership. M.K. Sott & M.S. Bender (2025) provided a conceptual framework for adaptive leadership in times of crisis. Research findings emphasise that leaders must not only respond to external shocks but also actively manage internal organisational changes. An organisation's ability to rapidly change its structure and processes is a prerequisite for successful survival. Furthermore, in a study by M. Fedyk (2024), resilience achieved during conflict is regarded as a prerequisite for effective post-war recovery. The interaction between the public and private sectors is particularly noteworthy. F. Graf *et al.* (2023) demonstrated that the institutionalisation of a crisis regime in public administration creates a more stable environment for economic activity. This is consistent with the research by D. Varakin *et al.* (2024), demonstrating that adaptive business strategies are more effective when supported by flexible state mechanisms.

In response to direct military risks and financial shocks, businesses have developed a range of operational and financial adaptation mechanisms, ranging from the physical relocation of assets to strict financial discipline and the search for non-traditional sources of capital. Research by N. Smochko & T. Luzhanska (2022), H. Zelisko (2023) and S.V. Korobka (2023) emphasised that relocation is the primary tool for maintaining the economic activity of enterprises. Another approach, according to K. Kekola (2022) and K. Itiola (2023), is the diversification of activities, which helps mitigate risks and increase profitability, though it requires systematic risk assessment in wartime conditions. The issue of financial stability was actively examined by O. Karintseva *et al.* (2025), emphasising the significance of rigorous cost optimisation and the review of contractual obligations.

The issue of contract management is becoming increasingly relevant in a climate of legal and regulatory uncertainty. Despite the need for businesses to possess strong negotiating skills, F.D. Domingos *et al.* (2025) have highlighted the difficulty of revising public contracts due to strict regulations. According to K. Alekseieva *et al.* (2023), government and international support programmes are substantial in ensuring sustainability. T. Batrakova & E. Semibratova (2023) argued that grants, international aid and crowdfunding serve as alternative sources of funding. The latter, as shown by K. Efrat *et al.* (2023) and S. Adala *et al.* (2025), is based on mechanisms of emotional interaction between donors and businesses and operates according to the "compassion economy" model, which makes it an effective but unstable instrument of long-term financing.

At the same time, researchers view digitalisation not merely as a means of survival during a crisis, but as a fundamental driver of post-war modernisation and the socio-economic development of regions (CSIS, 2021). For instance, V. Tyshchenko *et al.* (2024) demonstrated that digital transformation forms the basis for innovative development, which is of strategic rather than merely tactical significance. In the context of economic recovery, I. Nechayeva & I. Shylovets (2024) viewed digital technologies as a factor that will help the country and its individual regions to recover and modernise. Automation, which is part of digital transformation, influences the future of production processes, results and economic structures (European Parliament, 2021).

The war in Ukraine has accelerated the revision of global cyber strategies. G. Austin & N. Khaniejo (2023) and G.B. Mueller *et al.* (2023) demonstrated that cyber operations have become an integral component of modern armed conflict. Therefore, NATO and international institutions regard digital transformation as a key element of security (NATO ACT, 2023). Cyber resilience is becoming a strategic economic asset, and the digitalisation of business, according to V. Tyshchenko *et al.* (2024), must be combined with physical security measures, in particular relocation. Thus, an analysis of academic sources indicates growing attention from researchers to the issue of business adaptation in crisis and wartime conditions. At the same time, existing studies predominantly examine individual aspects of resilience, which necessitates a comprehensive analysis of Ukrainian businesses' adaptation strategies under martial law.

MATERIALS AND METHODS

The study drew on academic literature and empirical case studies illustrating the strategies adopted by Ukrainian enterprises during the period of Russia's full-scale aggression, which has been ongoing since 2022. The criteria for selecting sources were their thematic relevance, particularly in areas such as macroeconomic vulnerability; operational survival tactics, such as relocation; the latest management models adapted to the conditions of martial law; financial stability and cost optimisation; digital transformation and cyber resilience. The empirical basis of the study also

included secondary statistical and analytical sources regulatory and analytical documents from the European Parliament (2021), research findings from Diia. Business (2023), sectoral analytics from the IT Ukraine Association (2023), analytical materials from Deloitte (2023), as well as open data and analytical reports from Opendatabot (2025a; 2025b). The study also included an analysis of the effectiveness of state support programmes such as "Affordable loans 5-7-9%" and grants ("YeRobota") (Ministry of Economy of Ukraine, 2025a; 2025b), as well as mechanisms for attracting financing from international financial organisations (IFOs), in particular risk-sharing instruments such as "Ukrainian Guarantees" (European Investment Bank, n.d.; European Bank for Reconstruction and Development, n.d.). The focus was on strategies reflecting a shift from the analysis of macroeconomic vulnerability factors to the examination of management decisions at the enterprise level. The focus was on models that increase ER. To achieve this objective, the study was conducted in three main stages using appropriate methods.

The first stage involved a theoretical framework and an assessment of the initial conditions, using historical and comparative analysis to trace the evolution of academic approaches – from a focus on the general impact of conflicts and macroeconomic vulnerability in 2018-2020 to a focus on operational survival tactics and AC (post-2022). The concept of the conflict continuum and "hybrid times" was also applied to determine how organisations function in conditions where strategies of war and peace are applied simultaneously. The second stage involved the analysis and systematisation of adaptive mechanisms (a systemic approach). Methods of analysis, classification and systematisation were used to identify and structure the various strategies implemented by Ukrainian businesses, enabling a move beyond simple anti-crisis measures. Classification was applied to structure cost-optimisation methods by area of implementation (financial, organisational, technological, strategic). Systematisation was used to identify the key elements of strategic reorientation, including crisis management, decentralisation of decision-making and scenario planning. Correlation analysis (based on secondary data) was applied to confirm that AC is the main mediator positively influencing ER.

The third stage involved synthesis, effectiveness assessment and the formulation of recommendations (synthetic and conceptual analysis). The synthesis identified key components of resilience models that integrate financial discipline, strategic flexibility and technological innovation. Effectiveness assessment was used to compare the advantages and limitations (risks) of key adaptive strategies (operational, financial, technological and external financial support strategies) against criteria of economic stability, management flexibility and long-term adaptability of enterprises. Conceptual analysis was used to identify critical gaps in the scientific literature, such as the need to transition from "survival mode" to "growth mode" and the assessment of the long-term social costs of adaptation. Based on the results obtained and the gaps identified, long-term recommendations were formulated for business and the state regarding the enhancement of the resilience of Ukrainian enterprises in the context of wartime and post-war transformations. The methodology is based on the transparent use of secondary sources, a clear classification of adaptation strategies (financial stability, strategic flexibility, digitalisation, securing funding), as well as the application of standardised analytical methods (analysis, synthesis, risk assessment). This can be used to replicate the research stages, verify the classifications, and assess the effectiveness of the strategies using the provided sources and defined analytical approaches.

RESULTS

According to data from Diia.Business (2023), Ukrainian businesses have gradually adapted to the conditions of war, as reflected in their management decisions: 33.4% already had an action plan in place, whilst 50.5% were in the process of deliberation and intuitive management. The analysis identified main trends and directions of Ukrainian enterprises' adaptation to the conditions of martial law. These directions are summarised in Figure 1.

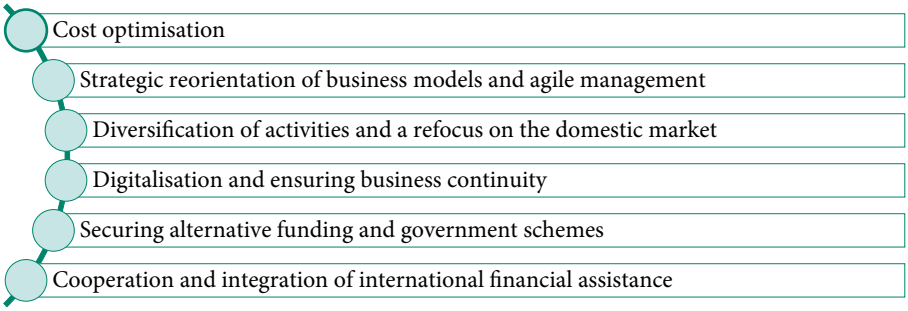

Figure 1. Ways in which Ukrainian businesses are adapting to the conditions of martial law
Source: compiled by the authors

Cost optimisation as a key element of financial stability. O. Karintseva *et al.* (2025) and I.O. Bobyliev & N.M. Chupryna (2025) established that, in the context of full-scale war, economic instability and dynamic shifts in consumer demand, cost optimisation has become a strategic imperative for Ukrainian businesses. This tool is

crucial for ensuring financial stability, maintaining profitability and competitiveness. The challenges of martial law have radically altered the structure of enterprises' operating costs: in particular, indirect or non-productive costs associated with physical security and ensuring business continuity have risen significantly. These additional items include costs for security, ensuring energy self-sufficiency (purchasing generators, uninterruptible power supply systems, and implementing alternative energy sources) and, in the event of relocation, costs for moving staff and equipment. The introduction of alternative energy sources increases initial investment costs, but at the same time ensures that businesses are resilient to systemic disruptions in the electricity supply. Furthermore, this helps reduce long-term operating costs.

In conditions of extreme uncertainty, where traditional static budgeting models have become obsolete, as noted by O. Karintseva *et al.* (2025), flexible budgeting has become the primary approach to financial management, in particular, methods such as rolling forecasting and zero-based budgeting (ZBB). These methods can be used to quickly adjust financial plans based on up-to-date data and new scenarios, thereby increasing adaptability. To support these flexible approaches, it is necessary to implement real-time cost control systems. The ability to promptly obtain and analyse up-to-date data on expenditure can be used for rapid decisions, minimising the loss of resources and time, which is particularly important in rapidly changing conditions. As part of optimising personnel costs and increasing flexibility, O. Karintseva *et al.* (2025) argued that the use of outsourcing and outstaffing is relevant. Organisational adaptation also involves training staff to perform multiple functions (multifunctionality) and implementing lean manufacturing principles. These measures help eliminate unproductive wastage of resources and time, ensuring maximum efficiency within existing constraints. Paradoxically, the rise in costs associated with ensuring energy self-sufficiency and physical security (as an initial response to risk) has acted as a catalyst for the adoption of cost-effective production practices and innovative cost management. This demonstrated that adapting to military challenges serves as a driver for improving overall business operational efficiency.

To reduce infrastructure costs, including logistics costs such as warehouse and transport maintenance, the study by I.O. Bobyliev & N.M. Chupryna (2025) demonstrated that businesses are actively seeking to collaborate with other companies. Sharing resources helps minimise downtime and improves the efficiency of logistics routes, which are also optimised using modern digital technologies. Furthermore, companies are forced to focus on producing or selling only the most profitable products, which can be used to rationalise resources and reduce unproductive stock. A substantial component of optimisation is the renegotiation of supply contracts. Although negotiations to amend terms during a crisis are legally complex, they are essential for survival. Scientific approaches to negotiations in crises emphasise the importance of reframing the problem and showing empathy towards the counterparty ("Feel the other side's pain"). Successful contract restructuring requires not only legal analysis but also psychological readiness to adjust initial expectations to minimise potential losses for both parties. Optimisation methods can be classified according to the areas in which they are implemented (Table 1).

Table 1. Methods for optimising costs in Ukrainian enterprises during martial law

Area of optimisation	Specific methods (examples)
Financial	Flexible budgeting (Rolling forecast, ZBB), real-time cost control
Organisational (HR)	Outsourcing, outstaffing, cross-functional training, decentralisation of decision-making
Technological (operational)	CRM/ERP implementation, process automation, infrastructure sharing (collaboration)
Strategic (security)	Emphasis on the most profitable products, the introduction of alternative energy sources, and the optimisation of logistics routes

Source: compiled by the authors based on O. Karintseva *et al.* (2025), I.O. Bobyliev & N.M. Chupryna (2025)

Strategic reorientation of business models and agile management. I.O. Bobyliev & N.M. Chupryna (2025) demonstrated that martial law forced companies to abandon rigid hierarchical structures and adopt more flexible organisational structures. As M. Fedyk (2024) argued, in conditions of armed conflict, the companies that survive are those capable of ensuring maximum flexibility, innovation and responsiveness. Effective strategic management in conditions of military instability, according to I.O. Bobyliev & N.M. Chupryna (2025), requires a comprehensive rethinking of traditional approaches, including: crisis management as a priority for risk management and ensuring business continuity; decentralisation of decision-making, in the form of granting greater autonomy to regional or functional units for faster response to local challenges and changing circumstances; scenario planning for the development of multi-variant strategic scenarios that can be used to prepare for various levels of escalation or destabilisation. The managerial implications of crisis conditions, as emphasised by M.K. Sott & M.S. Bender (2025), highlight the need to cultivate adaptive leadership and ensure the flexibility of the organisational structure for the effective allocation of resources. Such an approach creates a cycle of continuous growth, even when the organisation operates under conditions of high uncertainty.

The analysis presented by H. Zelisko (2023) demonstrated that business relocation is one of the most

significant and radical instruments of economic security implemented in response to the challenges of war. Relocation, which N. Smochko & T. Luzhanska (2022) defined as the movement of businesses (within the country or abroad) from zones of active hostilities, aims not only to protect existing facilities from destruction, but also to preserve employment, establish the production of critically needed goods and services, and replenish local, regional and state budgets. The practical implementation of these theoretical approaches is confirmed by the scale of this process in Ukraine. In particular, the dynamics of business relocation demonstrate the high adaptability of Ukrainian businesses: for instance, during 2025, Ukrainian businesses conducted internal relocation 8,345 times (Fig. 2).

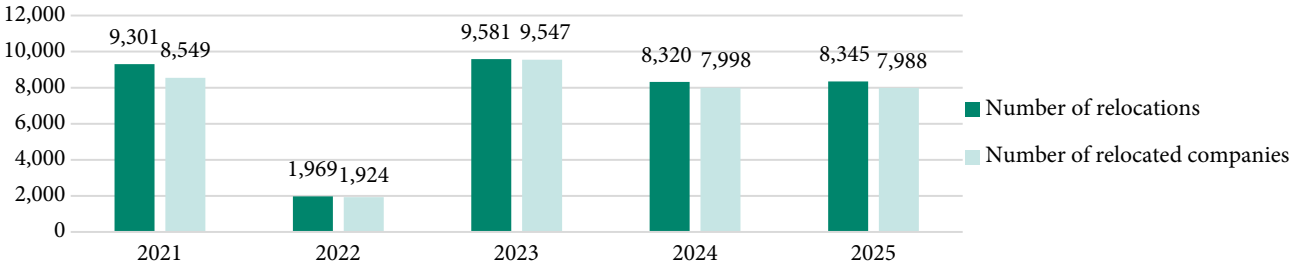

Figure 2. Number of relocations and relocated companies, 2021-2025, units
Source: compiled by the authors based on Opendatabot (2025a)

The data presented in Figure 2 indicated a certain shift in the dynamics of business relocation over the period under review. Whilst the figures up to 2022 reflected natural market mobility, the sharp drop in the number of relocations in 2022 (to 1,969) can be attributed to a state of 'shock-induced paralysis' and critical uncertainty. During this period, most enterprises focused on physical survival and the preservation of assets and staff in the context of imminent danger. The recovery and subsequent rapid growth in figures in 2023-2025 (over 8-9 thousand relocations annually) indicate that the shock phase has been overcome and that relocation has been transformed into a conscious tool of an adaptive competitive strategy. The high intensity of relocations from 2023 onwards indicates that businesses have moved from passive waiting to actively seeking safer and more economically viable locations to resume operations. The scale of this internal migration of capital and production capacity points to the emergence of a new economic geography in Ukraine, where security considerations are becoming a decisive factor in the strategic planning of business operations.

As noted by N. Smochko & T. Luzhanska (2022), the Ukrainian government, in conjunction with the Ministry of Economy, is implementing a state relocation programme aimed at supporting businesses located in areas of active hostilities. State support, which includes logistical assistance and financial incentives, is critical, as the relocation process is costly and complex from both a legal and technical perspective. Relocation is of particular importance for small and medium-sized enterprises (SMEs), which form a key component of the Ukrainian economy. According to S.V. Korobka (2023), the creation of favourable conditions for SME development in safe regions is one of the main ways for the state to emerge from the economic crisis. Enterprises relocating within the country can take advantage of preferential financing programmes, such as the state programme "Affordable loans 5-7-9%" (Ministry of Economy of Ukraine, 2025a).

Whilst domestic relocation is primarily a tactical move to ensure physical security, relocating businesses abroad requires a fundamental review of the entire business strategy. A study by H. Zelisko (2023) demonstrated that for successful international relocation, companies must thoroughly examine the specifics of doing business in the chosen country, assess the associated financial costs, and adapt their operational models to the new regulatory and market environment. Given Ukraine's European integration trajectory and the availability of preferential conditions for access to the single market, the European region has become the primary focus for such strategic expansion. Data presented in the study by T. Shepel (2025) confirmed this priority: 62% of companies that decided to relocate internationally chose EU countries (Fig. 3).

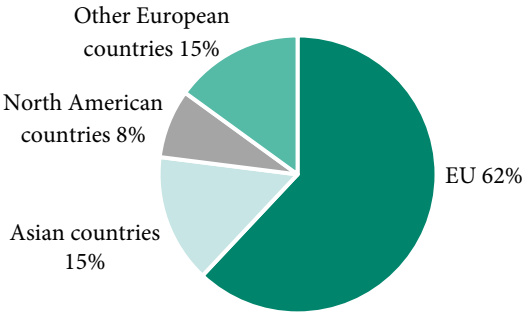

Figure 3. The geographical distribution of Ukrainian companies' relocations worldwide (breakdown by region)
Source: compiled by the authors based on T. Shepel (2025)

According to the study, the EU countries to which the largest number of companies have relocated are Poland (47%) and Germany (19%). Other EU countries included Bulgaria (12%), Belgium (10%), Estonia (8%) and Romania (3%). The physical relocation of a business is merely

the initial, reactive phase of adaptation, but its successful completion depends directly on the implementation of the subsequent, strategic phase, which involves flexible management and decentralisation. The high military risk that triggered the relocation leads to a change in the operational environment. For a company to function effectively in its new location and respond swiftly to local challenges (such as issues with logistics, staff or contractors), it must implement decentralised management structures, which, according to I.O. Bobyliev & N.M. Chupryna (2025) increases the overall resilience of the business and its ability to adapt rapidly to dynamic market changes.

Diversification of activities and a refocus on the domestic market. A study by K. Itiola (2023) demonstrated that business diversification, which involves the development of new products or services, is one of the fundamental strategies for minimising financial and operational risks in times of crisis. Under martial law, diversification is critical for managing risks associated with geographical instability and sharp fluctuations in demand, helping to maintain profitability. For enterprises, particularly small and medium-sized businesses, which typically have limited financial and human resources, concentric diversification has proven to be the most viable. This strategy involves creating new products or services that logically complement the existing portfolio. The advantage of concentric diversification lies in the fact that it can be used with existing infrastructure, equipment and expertise, minimising the need for risky investments. Although a significant proportion of Ukrainian businesses focus on maintaining their product range, almost a quarter of companies opt to produce new types of products (or services) whilst retaining their core range (Fig. 4).

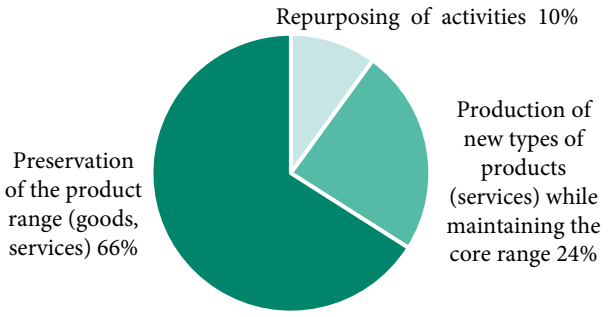

Figure 4. Percentage breakdown of the strategies preferred by relocated businesses when resuming operations
Source: compiled by the authors based on L. Yakymova (2025)

An analysis of the data presented in Figure 4 showed the distribution of recovery strategies among relocated enterprises, expressed as a percentage. Thus, most relocated entities (66%) focus on the strategy of "maintaining the product range", which is logical at the initial stage of relocation. At the same time, the choice of the strategies of "business reorientation" and "product portfolio diversification" indicates that these approaches are adopted by only a limited number of enterprises and serve as additional options for adapting to the new market.

The war caused significant, asymmetric disruptions to global supply chains, leading, as established in the study by D. Sarwar & S. Rye (2025), to shortages of critical materials, volatility in energy markets and serious transport problems. These events, according to L. Bednarski *et al.* (2023), forced many firms to completely rethink the configuration of their global logistics networks. The adaptation strategies documented in D. Sarwar & S. Rye (2025) are aimed at enhancing the resilience of supply chains. Such strategies include diversifying supply sources and reducing dependence on a single supplier or geographical region, developing strategic reserves and stockpiling critical materials to ensure production continuity, accelerated digitalisation, and the use of technologies to optimise logistics and track shipments. This highlights permanent changes in supply chain configurations, which will persist even after the conflict has ended.

In the context of external instability and the blockage of export routes (particularly maritime ones), refocusing on the domestic market has become an essential strategy for survival and stabilisation. According to Diia. Business (2023), most businesses continue to orient their development towards the domestic market: 50.9% of businesses in the western regions, 51.8% of enterprises in the northern regions, 67% of companies in the central part of the country, 62.7% of businesses in the eastern regions, and 67.8% of enterprises in the south. War significantly reduces revenues from foreign and domestic trade, but, according to C.F. Thies & C.F. Baum (2020), emphasising domestic demand, particularly for critical goods, provides businesses with relatively stable effective demand. Military operations often lead to a reallocation of resources within a country. R. Bonfatti & K.H. O'Rourke (2018) argued that domestic raw materials can be redirected from traditional exports to meet the needs of the military sector or critical civilian production.

The shift towards exports by a significant proportion of businesses previously dependent on the domestic market is having a positive impact on the Ukrainian market; among other things, it is improving the quality of products and services, boosting demand for innovation, enhancing management culture, raising wages for skilled workers, and facilitating the return of refugees. A significant proportion of enterprises planning an export reorientation are businesses that already had experience of export activity in the pre-war period. The results of the Diia.Business survey (2023) shows that 43% of SMEs plan to develop their exports. By region, 48.2% of businesses in the western regions, 47.8% in the northern regions, 33% in the centre of the country, 36.2% in the eastern regions, and 30% in the southern part of the country have made this decision.

A study by K. Kekola (2022) demonstrated that diversified companies with multiple business segments exhibit greater resilience thanks to the so-called internal capital

markets mechanism. This mechanism ensures efficient reallocation of financial and production resources from segments that have been severely affected by war or logistical constraints to those segments that demonstrate better growth opportunities (for example, in the domestic market or in the defence procurement sector).

The role of digitalisation in ensuring business continuity. Digital transformation, as the foundation of resilience, has proved to be not merely a trend but also a catalyst and cornerstone for ensuring business continuity for Ukrainian enterprises. The successful experience of major players in the logistics sector (such as Nova Poshta and Ukrposhta), examined in a Deloitte analytical study (2023), has demonstrated that the use of digital technologies maintains vital operations even during active hostilities and systemic infrastructure disruptions. The introduction of remote working and learning has become the primary mechanism for retaining human capital and ensuring operational flexibility. Digital services, which were already being developed in Ukraine before the war, ensure business and even resolve financial matters (such as applying for loans or grants) from anywhere. According to I. Nechayeva & I. Shylovets (2024), this sector has the potential to be decisive in post-war reconstruction, transforming the workforce, infrastructure and business processes as a whole. The effectiveness of implementing such digital solutions and the resilience of the Ukrainian technology sector are directly reflected in foreign trade indicators, the trends of which are shown in Figure 5.

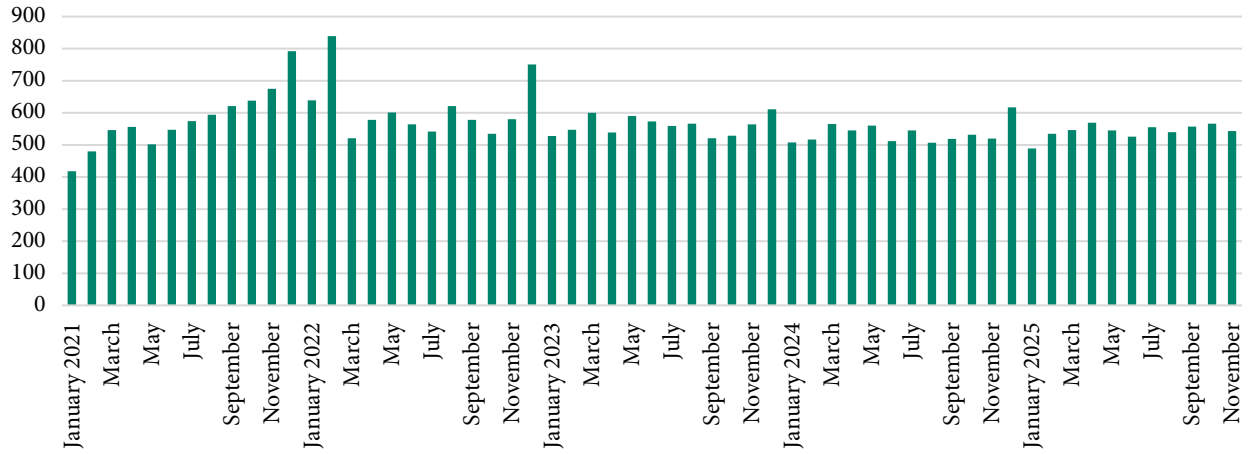

Figure 5. Trends in Ukrainian IT services exports, million USD
Source: compiled by the authors based on Opendatabot (2025b)

The trend shown in Figure 5 indicates that, before the full-scale invasion, there was a marked upward trend, reaching an all-time high just before the invasion began, in February 2022 (over 800 million USD). Despite the conditions of war, the sector demonstrated a high degree of adaptability. Although export volumes declined slightly, they remained stable at around 500-600 million USD per month. In 2024-2025, a certain stagnation in export figures is observed: revenue volumes fluctuate around the $550 million mark, which may be a consequence of both a global slowdown in the IT market and the exhaustion of domestic resources for extensive growth amid prolonged military risks. This industry remains a key component of the economic base, and its development and the promotion of exports, according to Opendatabot (2025b), IT accounts for 12% of Ukraine's total exports, which are a priority for stabilising the economy. Digitalisation in the context of the Russia-Ukraine war is characterised by specific dynamics driven by the circumstances of the conflict. Although global economic theories may suggest that economic stagnation often leads to a decline in investment in new technologies and productive capacity (Manche & Carbonell, 2022), in Ukraine, investment in digital solutions (such as ERP, remote infrastructure and cybersecurity) is proceeding at a rapid pace. M. Fedyk (2024) explained this by noting that technology is not so much a tool for economic growth as a critical tool for survival and ensuring continuity, which is a prerequisite for adaptation in wartime conditions. However, the active implementation of technology simultaneously increases vulnerability to cyberattacks, a fact that became particularly evident during Russian military aggression.

The military aggression against Ukraine became the field for the most extensive and sustained use of hostile cyber operations in world history. Technologies that provide new opportunities also bring new threats that directly influence the nature of military operations. As noted by G. Austin & N. Khaniejo (2023), this has created new challenges for businesses, such as the need to integrate cyber defence into their operational activities. According to the IT Ukraine Association (2023), cybersecurity expenditure as a proportion of the total annual budget for large companies (more than 250 employees) averages 10-15%, whilst small companies (with up to 50 employees) serving many clients with critical data spend an average of >20%. For a medium-sized enterprise, total expenditure on cybersecurity amounts to approximately 98,000 USD (Table 2).

Table 2. Cybersecurity costs for a company in Ukraine in 2023 (based on a company with 200 employees)

Costs	Total expenditure (USD)
Cost of monitoring staff behaviour	3,000
Simulation of a cyberattack on computer systems to test their security	35,000
Simulation of a real attack on the system	60,000
Total	98,000
Per employee	~500

Source: compiled by the authors based on IT Ukraine Association (2023)

The high proportion of expenditure on attack simulations and testing (totalling $95,000) demonstrates the maturity of Ukrainian companies' approach to cybersecurity. Instead of building static barriers, businesses are investing in dynamic system testing, which is a logical extension of the strategy of digitalisation and risk minimisation in turbulent conditions. Ukrainian cybersecurity, which is fundamental to economic resilience, according to G. Austin & N. Khaniejo (2023), requires continuous cyber defence, thereby blurring the line between cyber competition, crisis and war, which demands constant readiness; "defence in depth" as a proactive and multi-layered protection strategy, rather than merely a reaction to existing threats; and consistent budgetary allocations – cybersecurity must be among the highest priorities, requiring continuous funding to sustain core capabilities. A substantial element for enhancing cyber resilience, according to G.B. Mueller *et al.* (2023), is an effective partnership between the government and the private sector. This cooperation is vital for preventing a state of strategic digital parity and for sharing information on threats. Based on Ukraine's experience, cybersecurity is becoming an integral part of a survival strategy, transforming business competitive advantages into a long-term perspective.

Securing alternative funding and government schemes. In a climate where traditional sources of funding (bank lending, private investment) are becoming limited due to increased risk and uncertainty, businesses are forced to turn to alternative mechanisms. Crowdfunding is substantial among these, serving as a modern tool that raises funds from a wide range of investors via online platforms. According to data from Statista (n.d.), the global crowdfunding market was valued at 1.05 billion USD in 2025. The average annual growth rate in the crowdfunding market is expected to be 20.5% between 2024 and 2029.

The functional purpose of crowdfunding has also undergone a transformation. Whereas previously it mainly supported ambitious new projects, under the conditions of martial law established by L. Didenko *et al.* (2025), it has become a "financial lifeline" for existing but struggling businesses. This thesis was confirmed by S. Adala *et al.* (2025): in their view, the growing number of crowdfunding campaigns is aimed not at realising new ideas, but at covering urgent needs, such as operating costs, rent or staff wages. The success of these rescue campaigns, despite the high level of uncertainty, is partly explained not only by economic expediency but also by socio-psychological factors. Research showed that the willingness of crowdfunding participants to support small businesses during a crisis may be driven by a sense of social solidarity they derive from this support (Efrat *et al.*, 2023). One of the main crowdfunding platforms in Ukraine is Biggggidea, which actively promotes the implementation of socially significant initiatives and the raising of funds for projects through collective contributions (Table 3).

Table 3. Key figures on the funding of social initiatives via the Biggggidea platform in Ukraine, 2025

Indicator	For 2025
Number of benefactors (individuals)	110,412
Number of opportunities (projects) over the entire period (units)	13,995
Total amount invested (UAH)	58,443,914

Source: compiled by the authors based on Bigidea (n.d.)

Data in Table 3 indicate the emergence of a support system for socially significant initiatives. Donors demonstrate a high level of trust in digital fundraising platforms, highlighting the shift in philanthropy from large one-off donations towards a mass movement of small contributions. The number of implemented opportunities indicates that the Biggggidea platform is an effective tool for scaling up local initiatives in the fields of culture, education and social protection. The average donation amount (the ratio of the total sum to the number of donors) is approximately 529 UAH, which demonstrates the accessibility of social investment for the average citizen, a key indicator of the democratisation of financial support for social change. On average, each initiative receives around 4,176 UAH, indicating that the platform is primarily focused on supporting micro-projects or the initial stages of implementing big ideas.

State support is crucial for reviving businesses and preventing them from going bankrupt (Alekseieva *et al.*, 2023). The Ukrainian government has introduced or adapted a range of anti-crisis measures and preferential financing programmes. The "Affordable loans 5-7-9%" programme: Implemented by the Entrepreneurship Development Fund (EDF). Research conducted by H. Zelisko (2023) indicated

that this programme offers preferential interest rates (5%, 7% or 9% per annum) depending on the business's revenue and commitments to create jobs. According to data from the Ministry of Economy of Ukraine (2025a), during the period of martial law, entrepreneurs received 99,700 loans totalling 370.4 billion UAH. In 2025, under the programme, businesses secured 30,100 loans totalling nearly 94 billion UAH (Fig. 6).

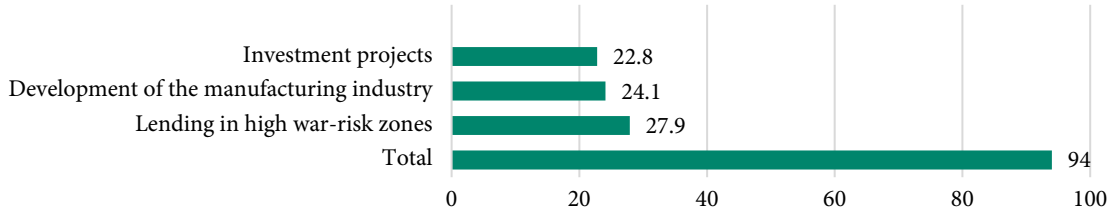

Figure 6. Total value of loans under the "Affordable Loans 5-7-9%" scheme in 2025, in billions of UAH
Source: compiled by the authors based on the Ministry of Economy of Ukraine (2025a)

An analysis of the data presented in Figure 6 shows that by 2025, the "5-7-9%" programme had evolved into an effective tool for the structural restructuring of the economy. The allocation of resources reveals a shift in the programme's focus from supporting current liquidity to strategic areas of economic recovery and resilience. The total volume of lending across the three strategic areas amounts to approximately 74.8 billion UAH, underscoring the government's priority on security challenges and industrial development. The high proportion of loans in high-risk areas also attests to the effectiveness of state portfolio guarantee mechanisms, which ensures mitigation of some of the war-related risks. The largest volumes of lending have been taken up by businesses in the agricultural sector, the processing industry, and the wholesale and retail trade. On the "Diia" government services portal, via the "YeRobota" tab (YeRobota, n.d.), entrepreneurs can apply for grants, which serve as an alternative source of non-repayable funding for relocation, business recovery and diversification. In particular, the state has invested 12 billion UAH in the development of small and medium-sized businesses through the YeRobota grant programmes (Ministry of Economy of Ukraine, 2025b). Almost 25,000 entrepreneurs have received financial support to start or develop their businesses. Grant recipients have already returned 75% of the invested funds in the form of taxes and duties paid to the budget. The main areas of grant support and the figures characterising them are presented in Table 4.

Table 4. Level of government investment in the development of SMEs through grant programmes

Areas of grant support	Number of grants, units	Total investment, UAH
"Vlasna Sprava" (microgrants)	22,488	5.3 billion
Processing plants	926	4.6 billion
Horticulture and the development of greenhouse farming	268	1.3 billion
To war veterans and their families	1,122	525 million

Source: compiled by the authors based on the Ministry of Economy of Ukraine (2025b)

In terms of the number of grants, the "Vlasna Sprava" programme is the undisputed leader in terms of reach. By contrast, the "Processing Enterprises" sector has the highest average grant value (approximately 5 million UAH). The total volume of investment through the YeRobota programme demonstrates the state's transition from a model of social payments to a model of investing in citizens' economic agency. The areas of use for grant funds include the purchase of equipment, the restoration of production facilities (with the possibility of resubmission), and investments in energy resilience (solar panels, generators).

An analysis of the data presented confirms the strategic role of public investment; however, the authors agree with the view expressed by K. Alekseiev *et al.* (2023) regarding the need to improve the mechanisms for allocating these resources. Although state aid is necessary, a substantial task for improving effectiveness is to establish clear criteria for selecting viable business entities. It is necessary to identify and support those companies that have the potential for recovery and growth, whilst simultaneously removing so-called "zombie enterprises". Thus, state support must evolve from simple liquidity financing to strategic investment in sustainability.

Cooperation and integration of international financial assistance. Under martial law, the state undertakes to create all the necessary conditions for the functioning and recovery of businesses. This includes the systematisation of state aid, for example, in sectors such as agribusiness, which has a direct impact on food security. The government must also implement regulatory and legal measures aimed at stimulating business activity and minimising risks. D. Varakin *et al.* (2024) noted that effective management of economic security during military operations requires the development of adaptive risk management strategies that combine external support with the internal flexibility of enterprises.

T. Batrakova & E. Semibratova (2023) argued that external financial assistance plays a decisive role in sustaining the functioning of the public sector of the economy, stabilising the country's monetary and financial situation, and safeguarding the national currency's exchange rate. However, mechanisms that reduce investment risks are of critical importance to the private sector. IFOs, such as the European Investment Bank or the European Bank for Reconstruction and Development, actively use risk-sharing instruments, in particular "Ukrainian Guarantees". These guarantees serve as a mechanism to cover financial risks for various transactions in the public and private sectors (loans, counter-guarantees). The main effect of introducing guarantees is a reduction in collateral requirements for companies receiving financing, which significantly broadens the range of enterprises that can access the necessary funds. A striking example is the creation of the Ukraine Sub-Fund by EFSE (European Fund for Southeast Europe), which was implemented with the support of the German and EU governments (EU NEIGHBOURS east, 2024). This fund aims to support the recovery and resilience of war-affected businesses by working with local financial institutions.

During wartime, it is necessary to implement digital monitoring tools for international aid, as they ensure transparency and oversight of project implementation, the prompt identification of problems and minimisation of risks, alignment with EU standards, the effective allocation of resources and coordination among participants, simplified reporting for recipients, and timely assessment of the impact of aid on business resilience and economic stability. Long-term economic recovery is impossible without attracting significant volumes of foreign direct investment (FDI). This is a key element for economic transformation and the transition to a "new economy", as FDI fulfils not only a financial but also a structural and technological function in economic development. Attracting FDI requires the state not merely to adopt an "open-door policy", but to develop comprehensive, long-term public policies and tailored incentives. Effective strategies for attracting FDI include: the development of sectoral clusters; reducing the tax burden; strengthening educational and research programmes; and providing venture capital and investment incentives.

The process of international cooperation involves a transition from initial assistance to investment partnerships. Initial financial assistance (grants, concessional loans) is aimed at ensuring survival and liquidity. However, to ensure long-term economic transformation and attract FDI, it is necessary for the state, in conjunction with IFIs, to effectively absorb and minimise investment risks through guarantees. According to T. Batrakova & E. Semibratova (2023), mitigating these risks through risk-sharing mechanisms is a factor that stimulates private sector lending and forms the basis for sustainable recovery. The alternative financing and international support instruments that were actively used during the period 2022-2024 are presented in Table 5.

Table 5. Alternative financing instruments and international support

Source of funding	Tool	Purpose	Effect
State	Preferential loans (5-7-9%), Grants ("YeRobota")	Relocation, regeneration, job creation	Supporting liquidity and safeguarding SME production
Community/Private sector	Crowdfunding (rescue campaigns)	Covering operating costs (rent, staff)	Financial lifeline, made possible by social solidarity
IFIs	Ukrainian Guarantees (risk-sharing), Specialised sub-funds (EFSE)	Private/public sector financing, energy efficiency	Reduction of financial risks, expansion of access to credit

Source: compiled by the authors

Financial support for Ukrainian businesses is a multi-tiered structure that has emerged in response to the extreme challenges of wartime. The public sector (the Financial Support Programme) serves as the foundation for liquidity. Programmes such as "5-7-9%" and "YeRobota" serve as a "first aid" measure for businesses. Their role is critical not only for creating new jobs but also for the physical preservation of production capacity through relocation mechanisms. The community and the private sector are viewed as emotional capital. Crowdfunding serves as a unique instrument of social solidarity. Unlike, for example, bank lending, it covers the most "vulnerable" operating costs (rent, wages), enabling small businesses to survive during periods of zero profit, which makes MFIs a guarantor of stability. The use of risk-sharing instruments is essential for attracting capital to a country with high military risks, enabling Ukrainian banks to lend to the real sector whilst having potential losses partially covered by international donors.

Thus, resilience in wartime is a multidimensional construct: it requires a combination of operational changes (relocation, diversification), financial discipline (cost optimisation) and adaptive leadership. A critical factor for survival, particularly for SMEs, is access to non-traditional sources of funding (grants, crowdfunding), which, according to V. Korolkov *et al.* (2025), fill the gaps created by dysfunctional traditional markets. A summary of the key findings shows that each strategy has significant advantages, but is also accompanied by risks that must be addressed when developing, inter alia, national economic policy (Table 6).

Table 6. A synthesis of the effectiveness of adaptive strategies

Strategy	Adaptation mechanism	Benefits	Limitations and risks
Operational adaptation	Relocation and diversification	Reducing direct military risks; maintaining production capacity and flexibility.	High logistics costs; risk of losing skilled staff; regional imbalances.
Financial adjustment	Cost optimisation	Maintaining liquidity and financial viability in the context of reduced demand.	Risk of a decline in the quality of products/ services; strained relations with counterparties when renegotiating contracts.
Technological adaptation	Digital transformation	Continuity of processes; foundation for rapid post-war modernisation and regional development.	Requires significant investment; high risk of cyberattacks; a shortage of skilled IT staff.
Financial support	Grants and crowdfunding	Fast and affordable non-bank financing to help SMEs survive in the short term.	Lack of long-term reliability; dependence on emotional "economy of compassion"; limited scope.
Strategic management	Adaptive leadership	Speed of decision-making; an organisation's capacity for structural transformation.	Reliance on the skills of a limited number of leaders; potential burnout among management teams.

Source: compiled by the authors

Analysis of the adaptive strategies presented indicates that they are geared towards business survival and transformation in conditions of extreme uncertainty, where each adaptation model strikes a balance between the immediate preservation of assets and long-term structural risks. Operational and financial adaptation ensures basic viability through relocation and the maintenance of liquidity, yet poses risks of human capital loss and a decline in product quality. At the same time, technological digitalisation and adaptive leadership act as catalysts for modernisation, although they are critically dependent on scarce skills and high investment. Overall, the effectiveness of these strategies is twofold: they ensure a flexible response to wartime challenges, but simultaneously make them vulnerable to "economy of compassion", cyber threats and managerial burnout, necessitating a shift from piecemeal measures to an integrated resilience system.

Thus, the adaptation of Ukrainian enterprises to the challenges posed by martial law is a multi-faceted process that exceeds the scope of simple anti-crisis measures. Research shows that successful enterprises use comprehensive adaptation models that integrate financial discipline, strategic flexibility and technological innovation. At the same time, the digitalisation of processes acts as an integrator of all adaptation strategies; not only ensuring management flexibility (through remote working) and reducing operational costs (through business software systems such as ERP and CRM), but also strengthening the resilience of supply chains (through accelerated digitalisation of logistics). This accelerated technological modernisation, driven by security challenges and the need for continuity, is transforming the business environment for the long term. Furthermore, decentralised management and scenario planning supported swift response for relocated and affected enterprises to local changes, turning physical relocation into a strategic advantage. Lastly, financial stability is ensured not only by internal optimisation (ZBB, Lean), but also by external support, which utilises risk-sharing instruments (IFO guarantees) to overcome the limitations of the traditional financial market.

DISCUSSION

The analysis confirms a shift in the scientific paradigm from static vulnerability analysis to a dynamic study of AC, which is consistent with the findings of A.S. Alshebami (2025). A common feature of the results is the recognition of AC as a critical mediator that directly shapes ER. However, in contrast to the study by A.S. Alshebami (2025), which focuses primarily on small enterprises in more stable crisis conditions, the current study emphasises that, in wartime conditions, this link is reinforced by the need to simultaneously apply survival and development strategies.

A substantial aspect of the discussion is the concept of the "conflict continuum" and the "hybrid era", proposed by E. Berthelsen (2025). The findings of this study are fully consistent with the author's argument that modern business can no longer distinguish between periods of "war" and "peace". A common conclusion is the need to integrate security strategies into day-to-day operational activities. At the same time, this study complements this concept with practical tools, in particular through the model of digitalisation as a means of ensuring cyber resilience, which is considered in less detail in the study by E. Berthelsen (2025).

The issues of strategic management in conditions of extreme turbulence, as explored by I.O. Bobyliev & N.M. Chupryna (2025) are corroborated in the present study regarding the importance of decentralisation and scenario planning. The authors share the view of I.O. Bobyliev & N.M. Chupryna (2025) stated that rigid hierarchical structures are losing their effectiveness. However, this study further categorises cost optimisation methods into four areas (financial, organisational, technological, strategic), providing practitioners with a more structured roadmap for action compared to general recommendations on flexibility. The study by M.K. Sott & M.S. Bender (2025), dedicated to adaptive leadership, emphasises the role of internal organisational changes in ensuring business resilience. The findings are consistent with this position, particularly regarding the need to develop staff multifunctionality. At the same time, the difference in approach lies in the focus on external support factors: it is argued that even with adaptive leadership

in place, a business critically needs access to government programmes and risk-sharing instruments to remain viable.

The issue of business relocation, which has been thoroughly examined by N. Smochko & T. Luzhanska (2022) and H. Zelisko (2023), is a recurring theme in this study as well. The data on the number of relocations in 2025 (8,345 cases) in this study confirm arguments of H. Zelisko (2023) regarding relocation as a radical security tool. However, this study expands on this discourse, highlighting that relocation abroad (in particular, 62% to the EU) requires not merely a physical move, but a complete transformation of the business model to meet the demands of new markets, which is a more complex challenge than domestic relocation. The financial aspect of resilience through cost optimisation is examined in detail by O. Karintseva *et al.* (2025). The conclusions drawn in this study concur regarding the importance of strict financial discipline; however, a paradox was identified that was not emphasised in O. Karintseva *et al.* (2025): rising costs related to security and energy independence (generators, alternative energy) often serve as a catalyst for the implementation of Lean technologies, which improve long-term efficiency of the enterprise.

The role of digital transformation as a driver of recovery was highlighted by V. Tyshchenko *et al.* (2024); the authors of this paper share the author's view that digitalisation has strategic, rather than merely tactical, significance. In addition to the conclusions of V. Tyshchenko *et al.* (2024), the authors justify the need for digital monitoring of international aid as a factor of transparency, which is critical for attracting foreign investment in the post-war period. Lastly, alternative financing mechanisms, in particular crowdfunding, were examined by K. Efrat *et al.* (2023), highlighting the "economy of compassion" as the basis for such capital. The authors of this paper agree with this, but emphasise the instability of this instrument, proposing instead enhanced cooperation with IFIs through EU risk-sharing sub-funds as a more reliable strategy. Thus, this study integrates existing theoretical work on resilience with the unique empirical experience of Ukrainian business, proposing a comprehensive model that considers both internal managerial transformations and the need for institutional support.

CONCLUSIONS

The study summarised key adaptation strategies employed by Ukrainian enterprises during the period of martial law and assessed their impact on building business resilience in the context of hybrid threats. The results of the analysis indicated that the integration of financial discipline, strategic flexibility and digital transformation is becoming the foundation for ensuring the sustainability and recovery of enterprises in a situation of prolonged uncertainty. The study determined that financial stability is achieved through flexible budgeting, real-time cost control, optimisation of logistics and contractual operations, as well as the introduction of alternative energy sources. The strategic reorientation of business models – through crisis management, decentralised decision-making and scenario planning – ensures that businesses can adapt to rapid changes. Relocation, diversification of activities and a shift towards the domestic market play a significant role in minimising geographical and operational risks. Digital transformation, automation and the development of cyber resilience are key prerequisites for maintaining business continuity and competitiveness. Government and international financial support is also crucial, including grant programmes, crowdfunding, risk-sharing instruments and guarantee mechanisms provided by international financial institutions.

Based on the findings of the study, recommendations have been formulated aimed at strengthening the adaptive capacity of businesses and improving public policy under martial law. Business representatives must implement flexible management models, through scenario planning, rolling forecasting and the decentralisation of decision-making processes. Operational resilience should be enhanced by diversifying the product portfolio and entering new markets, which must be accompanied by the development of digital infrastructure, process automation and the strengthening of cyber security systems. Financial sustainability should be given particular attention through the mobilisation of alternative sources, such as grants, crowdfunding and participation in guarantee schemes. At the same time, it is necessary to ensure workforce flexibility by training staff in cross-functional skills and developing managerial competencies. At the level of public policy, the priority must be to strengthen institutional mechanisms to support relocation and encourage the resumption of business operations. It is necessary to expand risk-sharing programmes for the SME sector in close cooperation with international financial institutions. At the same time, it is necessary to improve mechanisms for providing grant aid based on clear criteria for business viability, to develop transparent digital monitoring of the use of international support, and to implement targeted government programmes to enhance the cyber resilience of the private sector.

The study results highlighted an area requiring further academic exploration: further theoretical and methodological research into the processes of building business resilience and adaptive management models in the context of prolonged crises and uncertainty. A promising area is the development of a system of indicators to assess enterprises' readiness for investment, scaling up and participation in post-war recovery programmes. It is also necessary to analyse the impact of the crisis environment on behavioural aspects of management, organisational culture, the emotional resilience of staff and the development of innovative potential, considering management strategies that combine military and peacetime development scenarios.

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Адаптаційні стратегії та моделі стійкості українських підприємств в умовах кризи та воєнного стану

Анотація. В умовах безпрецедентної за часи незалежності повномасштабної збройної агресії росії проти України, традиційні управлінські підходи виявилися малоефективними, що зумовлює гостру потребу в дослідженні нових механізмів виживання бізнесу. Трансформація підприємств під впливом екстремальної невизначеності стає визначальним фактором не лише збереження економічного потенціалу країни, а також її майбутнього відновлення. Метою даної роботи було здійснення всебічного аналізу адаптаційних інструментів українських компаній у період воєнного стану, що триває з 2022 року, та розробка науково обґрунтованої моделі підвищення їхньої життєздатності. Дослідження базувалося на застосуванні системного підходу, методів класифікації та порівняльного аналізу еволюції наукових поглядів на економічну стійкість у межах концепції «конфліктного континууму». У роботі ідентифіковано ключові вектори трансформації бізнесу, що охоплюють операційну, фінансову та технологічну сфери. Доведено, що адаптивна спроможність виступає фундаментальним медіатором, який безпосередньо формує загальну резилієнтність організації. Встановлено, що оптимізація витрат перетворилася на стратегічний імператив, змушуючи менеджмент впроваджувати гнучке бюджетування, енергетичну автономію та методи ощадливого виробництва. Важливим складником стійкості визначено релокацію активів, яка за підтримки державних програм дозволяє зберегти виробничий цикл у безпечних регіонах. Особливу увагу приділено цифровій трансформації, що забезпечує кіберрезильєнтність та безперервність процесів у гібридних умовах. Виявлено роль альтернативних фінансових джерел, таких як гранти та ризик-шерінг, у підтримці платоспроможності бізнесу. Авторами запропоновано узагальнену модель, яка інтегрує стратегічну гнучкість, децентралізацію рішень та сценарне планування як основу антикризового управління. Сформовані у роботі рекомендації та моделі можуть бути використані керівниками підприємств для коригування антикризових планів, а також органами державної влади при розробці програм підтримки та стимулювання інвестицій у післявоєнний період

Ключові слова: підприємницька резилієнтність; релокація; оптимізація витрат; цифровізація; кіберрезильєнтність; альтернативне фінансування; ризик-шерінг