

ENTREPRENEURIAL RESILIENCE MODELS UNDER PERMANENT CRISIS CONDITIONS: EVIDENCE FROM UKRAINE, ISRAEL AND GEORGIA

Chebanova Oksana

PhD in Economics, Associate Professor, Department of
Marketing, Commercial Activity and Economic Theory

e-mail: chebanova.op@kart.edu.ua

ORCID: <https://orcid.org/0009-0006-5703-107X>

Ukrainian State University of Railway Transport, Kharkiv, Ukraine

Chebanova Nataliia

Doctor of Economics, Professor

Department of Accounting and Audit

e-mail: n_chebanova@ukr.net

ORCID: <https://orcid.org/0000-0001-9300-1050>

Separated Structural Unit "Myrhorod Professional College

named after Mykola Gogol of the

National University 'Poltava Polytechnic

named after Yuriy Kondratyuk", Myrhorod, Ukraine

Abstract. *Business environments across a growing number of countries are no longer disrupted by crises — they are defined by them. Against this backdrop, the question of what makes some organisations genuinely resilient while others merely survive has moved from the periphery of management theory to its centre. This article investigates entrepreneurial resilience as a dynamic organisational capability shaped under conditions of permanent geopolitical and economic stress. Drawing on a comparative analysis of Ukraine, Israel and Georgia — three small open economies that have faced prolonged, structurally distinct crises — the study identifies three*

divergent resilience models and examines the adaptation strategies underpinning each. The theoretical framework integrates dynamic capabilities theory (Teece, Pisano), antifragility theory (Taleb), a typology of crisis impact regimes on business models, and the principle of Resilience by Design. Ukraine emerges as a case of mobilisation digitalisation, where the Diia state ecosystem has served as a stabilising scaffold for small and medium-sized enterprises (SMEs) operating under wartime conditions. Israel exemplifies transborder antifragility — a model in which security crises accelerate innovation, with the cybersecurity sector alone attracting 36% of all venture funding in 2024. Georgia illustrates the limits of liberal economic reform: an opportunistic transit hub whose growth proved structurally shallow and institutionally fragile. Four crisis impact regimes are systematised — antifragile, robust, adaptive and suspended — each calling for a distinct management response. The findings demonstrate that digital public infrastructure functions as a public good critical to SME survival during systemic shocks, and that fiscal liberalisation loses its stimulating effect when judicial independence erodes. Five strategic priorities are formulated for crisis-resilient management: prioritising institutional trust over tax incentives; embedding Resilience by Design at the architectural level; investing in digital public platforms; treating human capital retention as a form of strategic defence; and developing hybrid public-private startup financing models.

Keywords: *entrepreneurial resilience; business model transformation; antifragility; digital transformation; organisational resilience; systemic crisis adaptation; SMEs; wartime economy; Diia.City; comparative analysis.*

Problem statement. The architecture of global risk has shifted in ways that render much of the conventional crisis management literature inadequate. Where crises were once understood as discrete, bounded events — shocks from which a system recovers and returns to equilibrium — a growing number of economies now function in a state of open-ended, multi-layered instability. Geopolitical conflict, digital disruption, demographic dislocation and institutional decay no longer arrive in sequence; they compound one another. For enterprises operating in such

environments, reactive crisis management has ceased to be a viable strategy. Resilience can no longer be an emergency protocol activated after a shock — it must be embedded in the architecture of the organisation itself.

The urgency of this question is especially acute for Ukraine, whose business environment has been operating under conditions of full-scale armed aggression since 2022 — a degree of sustained disruption that has no modern peacetime equivalent. Yet the experiences of Israel and Georgia, both of which have long navigated elevated security and institutional uncertainty, offer comparative perspectives that are rarely brought into dialogue with the Ukrainian case. Understanding what each of these countries has done well, where each has fallen short, and what the patterns across all three reveal about the dynamics of entrepreneurial adaptation under duress — this is the animating question of the present study.

Analysis of recent research and publications. The theoretical roots of this study reach across several scholarly traditions. The concept of dynamic capabilities, developed by Teece D. and Pisano G. [1], defines organisational resilience not as a fixed characteristic but as the capacity to continuously reconfigure resources and competencies in response to shifting environmental conditions. Taleb N.N. [2] extended this logic with the notion of antifragility — the counterintuitive property of systems that do not merely withstand volatility but actually strengthen as a result of it. The classification of how different types of crises affect business models, and the mechanisms through which firms adapt, draws on the work of Rialp-Criado A. [3] and Zott C. [4], who demonstrated that business model innovation serves as a critical mediator between adaptive potential and financial performance. The three-phase model of organisational resilience — preventive awareness, operational adaptation and strategic repositioning — was articulated in the contributions of Brito E. [1] and Lengnick-Hall C. [5].

Within the Ukrainian academic community, the question of how SMEs adapt under wartime conditions has been addressed primarily through a practical lens. Research by OECD [6] and EU Scientists [7] has documented the scale of the disruption; however, the comparative dimension — how Ukraine's experience relates

to that of other economies that have long operated under sustained security or institutional stress — remains underdeveloped. It is precisely this gap that the present article seeks to address.

Aim and objectives of the article. The aim of this article is to conduct a comparative analysis of entrepreneurial resilience models and business model transformation strategies under conditions of permanent crisis, using Ukraine, Israel and Georgia as case studies, and to formulate strategic recommendations for businesses and government institutions on building organisational resilience as a systemic, designable property — rather than an improvised response.

Presentation of the main research material. Theoretical and methodological foundations. Contemporary strategic management theory has moved decisively away from viewing organisational resilience as a static buffer against external shocks. The prevailing understanding is that resilience is a dynamic capability — the ability to absorb disruption, adapt to altered conditions and, at the highest level, transform adversity into a source of competitive advantage [1; 2]. What the empirical record of firms during periods of sustained macroeconomic and geopolitical turbulence consistently reveals is that it is business model innovation, rather than product or process innovation alone, that serves as the critical mediator between adaptive potential and financial performance [3; 4]. When the rules of the market itself change, reconfiguring individual offerings is often insufficient — what is required is a fundamental rethinking of how value is created, delivered and captured [3; 5].

In practice, the impetus for business model transformation during a crisis typically corresponds to one of four distinct impact regimes, each of which calls for a different strategic posture and management toolkit [7; 8]. These regimes are systematised in Table 1.

Table 1. Crisis impact regimes on business models and corresponding adaptation strategies

Impact regime	Nature of the disruptive factor	Key adaptation mechanism	Strategic focus
Antifragile	Crisis-generated demand surge for specific solutions creates positive pressure on the business [7]	Scaling of digital platforms, activation of surplus logistics capacity, accelerated globalisation of distribution channels	Maximising market share; accelerating core business processes
Robust	Overall market volume fluctuates, but the operational core remains stable [7]	Cost optimisation and supply chain flexibility, without altering the fundamental value architecture	Workforce protection, liquidity management, customer base retention
Adaptive	Deep deformation of both consumer demand and the operating environment [7]	Radical reorientation of the value proposition; shift to remote delivery or sharing-based monetisation	Rapid hypothesis testing; cross-sector partnerships [10]
Suspended	Temporary inability to operate due to physical destruction or legal constraints [7]	Asset conservation and capital preservation, with retention of the core team	Securing emergency financing (grants, subsidies); preparation for restart

Source: systematised by the authors based on [3; 7; 8].

What Table 1 makes clear is that the regime a company finds itself in is not determined by the crisis alone. Internal factors — the degree of digital readiness, the flexibility of operational processes, the quality of prior strategic planning — shape which of these trajectories becomes available. The antifragile path is not open to every organisation; it requires pre-built capabilities that most firms only recognise as strategic assets in retrospect. The suspended regime, by contrast, is frequently not a choice but a consequence of the absence of financial reserves that would have made other options possible.

Deploying business model innovation under conditions of prolonged stress is consistently impeded by a cluster of systemic barriers: organisational inertia, the cognitive narrowing that accompanies sustained pressure, management's fear of cannibalising existing revenue streams and the straightforward scarcity of resources [8; 11]. What the cross-country evidence repeatedly shows is that successful adaptation is not simply a function of firm-level strategy — it depends critically on the quality of the enabling environment: the availability of digital public infrastructure, the responsiveness of regulatory policy and the coherence of the state's crisis management architecture [1; 2].

Ukraine: mobilisation digitalisation as a stabilising scaffold. Russia's full-scale invasion precipitated a degree of operational disruption for Ukrainian business that is without precedent in recent economic history. In the initial phase of the assault, approximately 64% of SMEs were forced to suspend or dramatically curtail their activities [6]. Even as the front line stabilised, average SME revenue had fallen by 43% and staffing levels by roughly 22% [7]. By 2024, Ukraine's Human Capital Index had declined 19% relative to the European average, with unemployment running at 17–20% [8].

What distinguishes the Ukrainian response is the degree to which advanced digital infrastructure — built during the 2015–2020 reform period with support from the World Bank, IMF and EBRD — enabled both macroeconomic governance and business continuity under wartime conditions [9]. The Diia ecosystem, which by the end of 2025 had reached more than 23 million users, had evolved into a comprehensive platform mediating interactions between citizens, businesses and the state [9]. The Diia.Sign digital signature technology made it possible to conduct business legally from anywhere in the world; the Diia.City special legal framework had attracted more than 1,560 corporate residents by 2025 [9].

The private sector proved remarkably agile. By 2026, Ukraine counted 11 million active online shoppers, with 60% of transactions completed via mobile devices [19]. Nova Poshta repositioned itself as a leading logistics operator across Central Europe. ERP system integration enabled SMEs to cut order processing times

by 25%, and the introduction of blockchain-based customs tools reduced cross-border disputes by 44% [11]. A substantial unmanned aerial systems (UAS) industry also emerged — one that currently depends heavily on short-term donor funding and will require a transition to sustainable public-private partnership financing to realise its long-term potential [10].

Key indicators of SME development and digitalisation in Ukraine during 2024–2026 are presented in Table 2.

Table 2. Key SME development and digitalisation indicators in Ukraine (2024–2026)

Indicator	Value	Source
Average SME revenue decline due to the war	43%	[7]
Average SME workforce reduction	22%	[7]
Human Capital Index decline vs. EU average	19%	[8]
Unemployment rate during wartime	17–20%	[8]
Diia ecosystem registered users	> 23 million	[9]
Share of large companies / SMEs with a web presence	70% / 30%	[6]
Rozetka's estimated share of the online retail market	45–50%	[19]

Source: systematised by the authors based on [6; 7; 8; 9; 19].

The figures in Table 2 capture what might be called the Ukrainian paradox: a business environment suffering historically severe shocks — a 43% revenue decline, a 22% workforce contraction — simultaneously undergoing rapid digitalisation. This is not coincidental. It reflects the hypothesis, supported by the Ukrainian experience, that a sufficiently robust digital public infrastructure can function as a genuine anti-crisis stabiliser, preserving economic continuity even as physical and logistical channels of commerce are destroyed. The sharp gap between large firms (70% with a web presence) and SMEs (30%), however, signals a structural inequality in digital access that constitutes one of the most important policy challenges of the recovery period.

Israel: transborder antifragility and the cybersecurity premium. The escalation of conflict following October 2023 struck Israel's technology sector — which accounts for more than 15% of GDP — with immediate operational force. In the first weeks of intensive fighting, between 15% and 25% of skilled IT professionals were called up as military reservists [11]. Around 70% of startups reported significant disruption to their operations; 40% saw financing rounds suspended or withdrawn [11].

Yet the Israeli startup ecosystem's response illustrated, in real time, what antifragility looks like in practice. Major technology companies — Gong among them — had already built distributed operational architectures that allowed critical R&D functions to be activated from offices in Ireland and New York [12]. Rather than cutting staff, employers pivoted to an entirely different set of benefits: subsidised housing in secure locations, round-the-clock access to medical and psychological support [12]. UCT Israel restructured its air freight operations to deliver critical components in two days rather than a week [12].

The financial data tell a striking story. Venture investment in Israel reached \$15.6 billion in 2025, up 24% year-on-year and 68% above the 2023 level [11]. The primary beneficiary was cybersecurity: a sector comprising just 7% of ecosystem companies that captured 36% — or \$3.8 billion — of total venture funding in 2024 [14]. Israeli companies including Zenity, Noma Security and Prompt Security are now leading the development of AI Security tooling — the emerging field of protection and access governance for generative AI systems [14].

Georgia: liberal model and the limits of institutional reform. The sweeping reforms of 2004–2012 established Georgia's reputation as one of the most open and business-friendly economies in the post-Soviet space [15]. That reputation, however, was never matched by a resolution of the country's underlying structural weaknesses: the current account deficit has persistently stood at around 12% of GDP, and roughly 60% of merchandise exports consist of raw materials [15].

The mass arrival of more than 100,000 Russian relocants in 2022–2023 — approximately 3% of Georgia's population — generated what proved to be an

artificial economic acceleration. GDP climbed from \$17.6 billion in 2014 to \$30.6 billion in 2023 [17], and growth ran at 7,5% in 2025 [18]. But the boom also exposed the fragility of the model. Inflationary pressure in the property market, the registration of shell companies, and a transit character of capital inflows all pointed to the same problem: growth without depth. By 2024, the migrant outflow was already reversing [16; 18].

The political pivot has proven more consequential still. The adoption of the 'foreign agents' legislation in 2023 and the subsequent suspension of EU accession talks until 2028 triggered a freeze in Western financial and institutional support [18]. Western FDI is contracting; less transparent capital from the east is filling the gap [18]. GITA — the Georgian Innovation and Technology Agency — continues to support a Tbilisi startup scene capitalised at \$243 million [20], but without a restored European integration trajectory, these initiatives risk remaining isolated islands of ambition within a commodity-dependent economy.

A comparative view across the three models. The analysis supports the identification of three structurally distinct approaches to business survival and transformation under prolonged adversity, which are systematised in Table 3.

**Table 3. Comparative characteristics of entrepreneurial resilience models:
Ukraine, Israel and Georgia**

Comparison criterion	Ukraine (Mobilisation digitalisation)	Israel (Transborder antifragility)	Georgia (Opportunistic transit hub)
Crisis type	Armed aggression and large-scale infrastructure destruction	Security conflict with partial military mobilisation	Institutional degradation compounded by migration shock
Key stabiliser	State digital platform (Diia)	Decentralised business architecture with cross-border R&D duplication	Liberal regulatory framework and geographic transit position
Dominant adaptation sector	E-commerce, logistics, DefenseTech	Cybersecurity, AI, AI Security tooling	Tourism, financial services, real estate
Primary	External donor funding	Venture capital (\$15.6	Relocant private capital

Comparison criterion	Ukraine (Mobilisation digitalisation)	Israel (Transborder antifragility)	Georgia (Opportunistic transit hub)
financing source	and international grants	bn in 2025)	and tourism revenues
Principal risk	Structural dependence on sustained external support	Progressive startup migration to foreign jurisdictions	Permanent loss of EU market access if reform trajectory is not restored

Source: systematised by the authors

What emerges from Table 3 is that no single model is unconditionally superior. Each carries genuine strengths alongside structural vulnerabilities that crisis conditions tend to amplify rather than conceal. Ukraine leverages digital mobilisation to offset physical destruction but remains acutely dependent on the continuity of external financing. Israel converts security pressure into innovation velocity but risks hollowing out its domestic ecosystem as successful companies migrate to more stable jurisdictions. Georgia benefited from a demographic windfall but has failed to convert transient capital into durable institutional or industrial capacity. Across all three cases, the quality of the institutional environment emerges as the decisive variable — more influential than the type of crisis, the sectoral composition of the economy or the scale of fiscal incentives on offer.

Conclusions and prospects for further development. The comparative analysis conducted across Ukraine, Israel and Georgia yields findings that are relevant well beyond the three cases examined. Entrepreneurial resilience, the study demonstrates, is not an instinct that firms discover in extremis — it is a systemic property that must be designed in advance, embedded in the architecture of the business model before the next crisis arrives. Companies that had already integrated redundant management circuits, distributed infrastructure and flexible human capital strategies before 2022 or 2023 consistently outperformed those that had not, regardless of the severity of the external shock.

Digital public infrastructure, the Ukrainian case makes clear, is not merely a convenience — it is a public good that can determine whether small businesses

survive a systemic shock at all. The Diia ecosystem demonstrates that investment in interoperable state digital services can radically reduce transaction costs and allow SMEs to maintain legal and commercial continuity even when their physical operating environment has been destroyed. Yet the Diia experience also illustrates a crucial limitation: a digital scaffold alone is not sufficient. Targeted subsidies, concessional credit and human capital support programmes must accompany it, because without them the platform cannot prevent the long-term erosion of the business base it is designed to serve.

Georgia's trajectory offers perhaps the study's sharpest lesson for policymakers: low taxes and simplified registration lose their power to attract and retain genuine economic activity the moment that judicial independence is compromised and property rights become uncertain. Fiscal liberalisation is a necessary but far from sufficient condition for a resilient entrepreneurial environment. The primacy of institutional quality over fiscal generosity is not a normative preference — it is an empirical finding supported by Georgia's own recent experience.

Finally, the study highlights a systemic vulnerability shared, in different forms, by all three economies: excessive reliance on a single funding modality — short-term donor grants in Ukraine and Georgia, late-stage venture capital in Israel — creates a structural fragility in the innovation pipeline. Hybrid financing models that combine public and private capital to support early-stage ventures represent the most promising structural remedy. Two directions for further research stand out as particularly pressing. The first is the development of quantitative methodologies for evaluating the relative effectiveness of specific adaptation strategies. The second is the construction of an organisational resilience index applicable to enterprises operating under wartime or sustained institutional crisis conditions.

References:

1. Brito, E., & Bhatt, R. (2023). Entrepreneurial resilience and growth strategy transformation post crisis. Deutsche National bibliotheca <https://doi.org/10.1186/s13731-023-00345-5>.

2. Taleb, N. N. (2012). Antifragile: Things that gain from disorder. Random House.
3. Rialp-Criado, A. (2023). Examining the effect of business model innovation on crisis management. Emerald Publishing. <https://doi.org/10.1108/INMR-11-2021-0213>.
4. Zott, C., & Amit, R. (2008). The fit between product market strategy and business model. Strategic Management Journal, 29(1), 1–26. <https://doi.org/10.1002/smj.642>
5. PMC. (2020). Analyzing the impact of the coronavirus crisis on business models. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7247997/>
6. OECD. (2023). Enhancing resilience by boosting digital business transformation in Ukraine. https://www.oecd.org/en/publications/enhancing-resilience-by-boosting-digital-business-transformation-in-ukraine_4b13b0bb-en.html
7. EU Scientists. (2024). Adaptation models of functioning of SMBs in conditions of war in Ukraine. <https://www.eu-scientists.com/index.php/sdel/article/view/341>
8. Ianna Journal. (2024). The human capital gap in wartime Ukraine. <https://iannajournalofinterdisciplinarystudies.com/index.php/1/article/view/1482>
9. Harvard Kennedy School. (2023). Ukraine's digital transformation: Innovation for resilience. <https://www.hks.harvard.edu/centers/cid/voices/ukraines-digital-transformation-innovation-resilience>
10. RAND Europe. (2025). Wartime innovation and adaptation: Supporting Ukraine's digital transformation. <https://www.rand.org/randeurope/research/projects/2025/innovation-adaptation-at-war-cm.html>
11. Entrepreneur Loop. (2025). Impact of war on Israeli startups: Funding & recovery. <https://entrepreneurloop.com/impact-of-war-on-israeli-startups/>
12. Ynet News. (2024). Startup Nation under fire: How Israel's tech sector keeps operating. <https://www.ynetnews.com/business/article/hjedm2c5zl>

13. Times of Israel. (2025). Built in crisis: The strategic playbook behind Israel's cybersecurity leadership. <https://blogs.timesofisrael.com/built-in-crisis-the-strategic-playbook-behind-israels-cybersecurity-leadership/>
14. Startup Nation Central. (2025). Israeli cybersecurity is defining the future in 2025. <https://startupnationcentral.org/hub/blog/israeli-cybersecurity-is-defining-the-future-in-2025/>
15. IMF. (2018). Georgia's path to economic diversification. <https://www.elibrary.imf.org/downloadpdf/view/journals/002/2018/199/article-A003-en.pdf>
16. Social Justice Center. (2023). Migration from Russia 2022–2023: Patterns, adaptation, relations. https://socialjustice.org.ge/uploads/products/pdf/Migration-from-Russia-English_1711969970.pdf
17. EBRD. (2023). Economic boom in the Caucasus and Central Asia in a time of Russian immigration. https://www.ebrd.com/content/dam/ebrd_dxp/assets/pdfs/communications-department/1730-Caucasus-CA-economic-boom.pdf
18. BTI Transformation Index. (2026). BTI 2026 Georgia country report. <https://bti-project.org/en/reports/country-report/GEO>
19. IWIS. (2026). 10 e-commerce trends in Ukraine in 2026. <https://iwis.io/en/blog/ecommerce-trends-ukraine-2026/>
20. Startup Genome. (2024). Tbilisi ecosystem. <https://startupgenome.com/ecosystems/Tbilisi>