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Adaptive Innovation Strategy for System Integration Companies' Performance under Conditions of Instability and Crisis

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Introduction.

In the modern era of global transformations [1], characterized by a state of permanent turbulence, traditional approaches to strategic planning in all (especially in high-tech) sectors of the economy require innovative reengineering [2]. This issue is particularly acute for companies specializing in system integration, which are the connecting link between innovative developments and their practical implementation in the real sector. The specificity of this industry is such that any external risks, shocks – a rupture of global logistics chains [3, 4], a shortage of semiconductors or a sharp change in vendor policy – instantly affect the stability of business processes. In the case when uncertainty becomes a constant [5], and risks – multi-level and multi-factor – classic linear strategies lose their predictive power, turning into a risk factor, rather than a development tool [6-8]. The concept of adaptive strategy comes to the fore, which involves not just reactive behavior in response to a crisis, but a deep internal transformation of the mechanisms of innovative activity [9]. The relevance of this study is dictated by the urgent need to overcome the contradiction between the long-term nature of innovation cycles and the short-term requirements of survival in conditions of instability. The aim of the work is to theoretically substantiate the model of adaptive strategy, which allows integrator companies not only to maintain target performance, but also to use crisis periods as a catalyst for a qualitative technological leap and strengthening market positions through flexible management of resources and

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competencies.

Main Part.

The main part of the study is based on the understanding of system integration as a specific high - tech service, where innovation activity is not only product-related, but also has a pronounced architectural and process character. In conditions of crisis and growing instability, the performance of such companies ceases to be derived from static competitive advantages and turns into a plane of implementation of the concept of dynamic capabilities. The theoretical basis of adaptive strategy in this context is based on the principle of strategic versatility - the ability of a organization to simultaneously optimize current operational processes (operation) and actively search for new technological niches (research). For the integrator, this is the need to maintain the stability of existing infrastructure projects while simultaneously accelerating the development of alternative software and hardware platforms. The mechanism for forming performance within the framework of adaptive strategy undergoes a qualitative transformation: if in stable conditions, priority is given to scalability and cost minimization, then in crisis conditions the dominant factor becomes the speed of resource reconfiguration. Adaptive strategy involves abandoning rigidly deterministic plans in favor of portfolio management of innovation initiatives, where each project is perceived as a set of real options. This allows the company to maintain flexibility, having the ability to quickly scale successful pilot implementations or roll back areas that have lost relevance due to changes in sanctions policy, vendor oversight, or changes in technological standards. System integration in this sense appears as a process of "intelligent assembly", where value is created not by owning individual technologies, but by unique competence in their seamless orchestration in conditions of shortage of time and resources. The key tool for implementing such a strategy is hybrid intelligent technologies [10], which become a reinforcement of the adaptive enterprise. Unlike highly specialized automation systems, hybrid intelligence allows to integrating the capabilities of machine learning and big data with the expert knowledge of a highly qualified engineers [11]. In times of crisis, when historical data cease to be a reliable basis for predicting the future, it is the cognitive synergy of man and machine that allows for the formation of predictive behavior

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models. Such technologies provide intellectual support in the design of the complex systems, and automatically selecting the optimal configurations of equipment and software from analogues available on the market. As well as modeling scenarios of the resilience of the created IT infrastructure to various types of external threats. Thus, the technological stack of the integrator company itself becomes an object of continuous innovation, adapting to changing security and efficiency requirements. An important aspect of the main part of the study is the analysis of the impact of the environment on the structure of the adaptive strategy. In case of instability, the integrator company is forced to move from the "supplier-customer" model to the "technology partnership" model. This requires the introduction of innovations in the field of interaction with stakeholders: the creation of joint laboratories, the use of open platforms and active participation in the formation of new industry ecosystems. The effectiveness here is determined by the depth of integration into the client's business and the ability to offer solutions that do not simply patch holes in the IT budget, but create new growth points for the customer. In this context, the adaptive strategy includes elements of service transformation, so when the focus shifts from a one-time delivery of complex systems to ensuring their continuous evolution and support throughout the entire life cycle (which guarantees a stable cashflow and high customer loyalty even in periods of economic downturn).

Concluding the systemic consideration of the main part, it is necessary to emphasize that the effectiveness of the adaptive innovation strategy is inextricably linked to the organizational culture and the quality of human capital. The transition to hybrid intelligent technologies requires personnel not only deep technical knowledge, but also a high level of adaptive intelligence. Innovations in human resources management become an integral part of the overall strategy, ensuring horizontal connections between project teams and a free exchange of knowledge. Ultimately, system integration in an era of crises turns into the complexity management, where victory in competition goes to those companies, that were able to turn technological uncertainty into a manageable development resource, relying on the synergy of human talent and advanced intelligent systems.

Conclusions.

The analysis conducted allows us to assert that in

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conditions of systemic instability, the effectiveness of enterprises in system integration directly correlates with the ability of their management structures to dynamically reconfigure key assets. The main theoretical and practical result of the study was the proof that an adaptive innovation strategy in this sector should be based on the principles of modularity and technological neutrality. We concluded that in periods of crisis, the most stable are those players who were able to integrate "anti-fragility" mechanisms into their business model, which allow them to benefit from market chaos through rapid changes in technological stacks and diversification of partner networks. The study showed that innovations in system integration during a crisis cease to be exclusively product-based and shift towards process and organizational solutions aimed at optimizing the cost of ownership of IT infrastructure for the end customer. Thus, the formed concept of adaptability – transforms the strategy from a rigid plan into a living self learning algorithm, where performance is measured not only by the financial indicators of the current period but also by the speed of adaptation of the innovation portfolio (to radically changing market demands, which ultimately ensures long-term survival and leadership in the high – end).

Prospects for further research.

The further development of the presented issues is inextricably linked with the deep convergence of classical management approaches and hybrid intelligent technologies, which should become the foundation for new generation decision-making systems. In the context of system integration such technologies that combine the analytical power of neural network models and the cognitive flexibility of expert systems open up exceptional opportunities for predictive risk management, but in conditions of high uncertainty. A promising vector of the research is the creation of intelligent agents capable of both processing arrays of market data and integrating the implicit knowledge of leading engineers and architects into calculations (thereby forming a synergy of machine accuracy and human intuition). The use of hybrid models will allow integrator companies to automate the process of dynamically reassembling the solution portfolio, quickly selecting alternative technological stacks in the event of a sudden change in external conditions. In future work, special attention should be paid to the issues of interpretability of such systems so that the adaptive strategy is based not on

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the “black box” of algorithms, but on transparent and substantiated development scenarios. Ultimately, it is the transition to hybrid intelligence in strategic management that will allow transforming the reactive model of company behavior into a proactive one, where technological sovereignty and competitiveness will be ensured due to the system’s ability to self-learn and evolve at a pace that is ahead of the rate of increase in crisis phenomena. This approach transforms adaptability from an operational characteristic into a fundamental property of the enterprise’s digital ecosystem, determining the vector of industry development for decades to come.

References:

- [1] Ostapenko T., Onopriienko D., Hrashchenko I., Palyvoda O., Krasniuk S., Danilova E. (2022) Research of impact of nanoeconomics on the national economic system development. *Innovative development of national economies: collective monograph*. – Kharkiv: PC TECHNOLOGY CENTER, 2022, pp. 46-70, <https://doi.org/10.15587/978-617-7319-64-0.CH2>
- [2] Maksym Naumenko (2024). Modern concepts of innovation management at enterprises. *Scientific innovations and advanced technologies* No. 6(34) (2024). DOI: [https://doi.org/10.52058/2786-5274-2024-6\(34\)-435-449](https://doi.org/10.52058/2786-5274-2024-6(34)-435-449)
- [3] Karpenko, Oksana & Kravchenko, Olha & Palyvoda, Olena & Semenova, Svitlana. (2025). Evaluating the effectiveness of innovation implementation at transport enterprises under conditions of uncertainty. *Academy Review*, 2. 75-88. 10.32342/3041-2137-2025-2-63-5.
- [4] Palyvoda, Olena & Semenchuk, Tetiana & Rachkovskyy, Eduard. (2024). Modelling growth strategies of transport enterprises in the conditions of context uncertainty. *Baltic Journal of Economic Studies*. 10. 255-267. 10.30525/2256-0742/2024-10-3-255-267.
- [5] Skitsko, V. (2009). Decision-making in conditions of uncertainty, conflict and the risk they entail. *Modeling and information systems in economics: Collection of scientific papers*. – K.: KNEU, 2009. – Vol. 79. – pp.52-61 [in Ukrainian].
- [6] Tsalko T. R., Nevmerzhytska S.M. (2023) Risk assessment in innovative activity. *Actual problems in economics, finance and management: materials of the International Scientific and Practical Conference*. East European Center for Scientific Research (Odesa, 25 october 2023). Research Europe, 2023. pp. 92-94 <https://researcheurope.org/product/book-31/> [in Ukrainian].
- [7] Nevmerzhytska, N. Buhas (2022). Opportunities, threats and risks of implementation the innovative business management technologies in the post-pandemic period COVID-19. *WSEAS Transactions on Business and Economics*. Volume 19. pp. 1215-1229.
- [8] Nevmerzhytska S. M. (2018). Formation of a strategy for the innovative development of enterprises in conditions of uncertainty. *Scientific Bulletin of the Kherson State University. Series: Economic*

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- Sciences*. 2018. Vol. 32. pp. 99–103. URL: <https://ej.journal.kspu.edu/index.php/ej/article/view/422/418>.
- [9] Mykytenko V.V., Hryshchenko I.S. (2008). Adaptive management system of innovative processes at enterprises. *Problems of science*, (4), pp. 32–37.
- [10] Krasnyuk, M. (2014). Hibrydyzatsiia intelektualnykh metodiv analizu biznesovykh danykh (rezhym vyivlennia anomalii) yak skkladovyi instrument korporatyvnoho audytu [Hybridization of intelligent methods of business data analysis (anomaly detection mode) as a standard tool of corporate audit]. *Stan i perspektyvy rozvytku oblikovo-informatsiinoi systemy v Ukraini – The state and prospects of the development of the accounting and information system in Ukraine: materials of the III International science and practice conf.* [m. Ternopil, October 10–11. 2014]. TNEU, 2014. pp. 211–212 [in Ukrainian].
- [11] M. Krasnyuk, S. Goncharenko, S. Krasniuk (2022) Intelektualni tekhnolohii v hibrydnii korporatyvnii SPFR [Intelligent technologies in hybrid corporate DSS (on the example of Ukraine oil&gas production company)]. *Innovation and investment mechanism for ensuring the country's competitiveness: collective monograph / by general ed. O. L. Khultsova.* – Lviv-Torun: League-Pres, 2022. – pp. 194–211 [in Ukrainian].