

























whole. This, in turn, provides an opportunity to reasonably develop measures to minimize risks.

## 5 Conclusion

In summary, the work identified and systematized the main directions and innovative technologies for running successful business in the not innovative leaders countries (on example Ukraine) during the COVID-19 pandemic. The systematisation of their characteristics was done according to the following scheme: direction, types of activities within the direction, interests of manufacturers (service providers), interests of consumers (clients), main threats to the implementation of this practice. Unlike the existing systematisation, it considers the groups of interests of the main market participants, as well as the main threats associated with the peculiarities of the implementation of these innovative technologies in in countries embarked on the path of innovative development.

This allows us to describe in more detail the existing prerequisites for innovative development, to increase the validity of the strategic directions of innovative development of specific types of business determination. The results of the systematisation form the basis of a relevant knowledge base about the peculiarities of the implementation of directions and, within them, innovative technologies for doing business in a pandemic and post-COVID period. It can be implemented to improve the validity of business technology decisions in countries embarked on the path of innovative development. Practical testing of justification of feasibility of freelance development in Ukraine using the specified knowledge base has confirmed the effectiveness of its application for making strategic decisions on business management in a post-pandemic time.

The approach to the analysis and quantification of risks of innovative business technologies that have shown its effectiveness during COVID-19 pandemic has been improved. The paper defined the risk of an innovative project implementation (a specific method for innovative business technology introduction) as an equivalent to basic risks caused by certain number of factors peculiar only to these threats. The division of the elementary risks into compatible - those that occur simultaneously and toughen each other, as well as incompatible - one excludes the other, was shown. Proposed approach allows to assess the overall risk of the innovation project and make more informed innovation decisions more precisely. This method excludes both double risks computing and ignorance of the

combined action of several types. The mathematical fuzzy logic apparatus provides a fundamental opportunity to consider the vague actions of risk factors and their combinations. It allows to make decisions to justify the selection and implementation of innovative projects in the context of inaccurate, incomplete or contradictory information considering the associated risks, objective and subjective factors.

For the practical testing author's approach the risks are analysed and the implementation feasibility in the conditions of COVID-19 and the post-pandemic period for the innovation project, which involves the creation of a logistics terminal in Sumy region of Ukraine is justified. Recommendations for reducing the risks of innovative business technology's for the project introduction are offered. Further research should focus on developing organisational and methodological principles of management following the formalised principles of the innovative technologies selection for doing business in the post-COVID period in countries embarked on the path of innovative development.

## References:

- [1] Access of Ukraine's households to the Internet in 2019 (2020). *Statistical collection of State Statistics Service of Ukraine*, 77 p. [https://ukrstat.org/uk/druk/publicat/kat\\_u/2020/zb/07/zb\\_\\_dd\\_in19.pdf](https://ukrstat.org/uk/druk/publicat/kat_u/2020/zb/07/zb__dd_in19.pdf).
- [2] Babenko, V., Koniaieva, Ya., Yevchuk, L., Dikan, O., Tokmakova, I., Korin, M. (2021). Study of Innovative Susceptibility of Low Potential Energy Technologies in Ukraine. *Estudios de Economía Aplicada*, Vol. 38-3(1), pp. 1-11. <http://dx.doi.org/10.25115/eea.v38i4.4095>.
- [3] Babenko, V., Pravotorova, O., Yefremova, N., Popova, S., Kazanchuk, I., Honcharenko, V. (2020). The Innovation Development in China in the Context of Globalization. *WSEAS Transactions on Business and Economics*, 17 (25), 523-531. doi: <https://doi.org/10.37394/23207.2020.17.51>
- [4] Bakaiev, A., Grytsenko, V., Kozlov, D. (1992). Expert systems and logic programming. Kyiv, 220 p.
- [5] Bilovodska, O., Mykhalchyshyn, N., Komarynets, S., Seniv, L., Humeniuk, V., Kantsir, I. (2021). Globalization Impacts on The Structure of Ukraine's Economy: Innovations Challenges for Management in Digitalization, Social and Economic Transformations. *Journal of Information*

- Technology Management*, 13. Special Issue, 20-34. [https://jitm.ut.ac.ir/article\\_82600.html](https://jitm.ut.ac.ir/article_82600.html).
- [6] Business and COVID-19: You can't die to survive. Federation of Employers of Ukraine. Analytical Center for Economic and Legal Research and Forecasting. [https://fru.ua/images/doc/analytics/BUSINESS\\_AND\\_COVID-19.pdf](https://fru.ua/images/doc/analytics/BUSINESS_AND_COVID-19.pdf).
- [7] Dvulit, Z., Zaverbnyi, A., Romaniuk, A. (2021). Digitalization – an effective tool for anti-crisis business development in a pandemic. *Efektyvna ekonomika*, 1. <http://www.economy.nayka.com.ua/?op=1&z=8557>.
- [8] Gebrehiwet, T., Luo, H. (2019). Risk Level Evaluation on Construction Project Lifecycle Using Fuzzy Comprehensive Evaluation and TOPSIS. *Symmetry*, 11(1):12. <https://www.mdpi.com/2073-8994/11/1/12>.
- [9] Gontareva, I., Babenko, V., Shmatko, N., Litvinov, O., Hanna, O. (2020). The Model of Network Consulting Communication at the Early Stages of Entrepreneurship. *WSEAS Transactions on Environment and Development*, Vol. 16, pp. 390-396. <https://doi.org/10.37394/232015.2020.16.39>.
- [10] Gregurec, I., Tomićić Furjan, M., Tomićić-Pupek, K. (2021). The Impact of COVID-19 on Sustainable Business Models in SMEs. *Sustainability*, 13, 1098. <https://doi.org/10.3390/su13031098>.
- [11] Gryshchenko, O., Babenko, V., Bilovodska, O., Voronkova, T., Ponomarenko, I., Shatskaya, Z. (2022). Green tourism business as marketing perspective in environmental management. *Global Journal of Environmental Science and Management*, 8(1), 117-132. doi: 10.22034/gjesm.2022.01.09.
- [12] Heiko, T. (2020). Priorities of entrepreneurship development in Ukraine in the conditions of the COVID-19 pandemic and post-quarantine period. *Socio-economic research bulletin*, 2 (73), 62–71. <http://vsed.oneu.edu.ua/collections/2020/73/pdf/62-71.pdf>.
- [13] Hrebeniuk, H., Martseniuk, L., Zadoya, V., Pikulina, O. (2021). Transformation and development of restaurant business enterprises of Ukraine during the pandemic. *Investments: practice and experience*, 7, 14-19. <http://www.economy.nayka.com.ua/?op=1&z=8557>.
- [14] Illiashenko, N., Rosohataya, A. (2016). Trendwatching as the tool of definition of strategic directions of development. *Marketing and Management of Innovations*, 1, 11-21. <https://mmi.fem.sumdu.edu.ua/en/journals/2011/1/29-35>.
- [15] Illiashenko, S., Shypulina, Yu. (2020). Digitalization of business in the condition of a world pandemic (COVID-19): domestic realities and prospects. *Global marketing: analysis and challenges of modernity. II International Scientific and Practical Conference*. Kyiv, 102-103. <http://feba.nau.edu.ua/component/k2/vidbulas-ii-mizhnarodna-naukovopraktychna-konferentsiia-hlobalnyi-marketynh-analiz-i-vyklyky-suchasnosti>.
- [16] Illiashenko, S., Shypulina, Yu., Illiashenko, N., Grishchenko, O., Derykolenko, A. (2020). Knowledge management at Ukrainian industrial enterprises in the context of their innovative development. *Engineering Management in Production and Services*, 12 (3), 43-56. <https://www.empas.pb.edu.pl/Journal-Issues/Volume-12-2020/YjHj-SMM60mVtxpUaOpmQM/EMPAS-12-3-2020>.
- [17] Kasych, A., Yakovenko, Y., Tarasenko, I. (2019). Optimization of business processes with the use of industrial digitalization. *Proceedings of the International Conference on Modern Electrical and Energy Systems*, MEES, 522-525. <https://ieeexplore.ieee.org/document/8896531>.
- [18] Konina, M. (2020). Where is the place of Ukraine in the world of high technology. Economic truth. <https://www.epravda.com.ua/projects/techiia/2020/01/21/655931/>
- [19] Lemeshko, M., Laktionova, O. (2020). Business support ecosystem under pandemic COVID-19 in Ukraine and EU in some countries. *Economics and Organization of Management*, 2 (38), 109-123. <https://jeou.donnu.edu.ua/article/view/9384>.
- [20] Olson, D., Wu D. (2020). Enterprise Risk Management Models. *Springer-Verlag Berlin Heidelberg* (225 p.)
- [21] Prokopenko, O., Toktosunova, C., Sharsheeva, N., Zablotska, R., Mazurenko, V., & Halaz, L. (2021). Prospects for the Reorientation of Investment Flows for Sustainable Development under the Influence of the COVID-19 Pandemic. *Problemy Ekorozwoju*, 16(2), 7-17. <http://doi.org/10.35784/pe.2021.2.01>.

- [22] Shevchenko-Perepolkina, R. (2020). Ways of small business development in COVID-19. *Market Infrastructure*, 49, 147-151. [http://www.market-infr.od.ua/journals/2020/49\\_2020\\_ukr/28.pdf](http://www.market-infr.od.ua/journals/2020/49_2020_ukr/28.pdf).
- [23] Starostina, A., Bilovodska, O., Nagachevska, T., Derbenova, Y., Pashchuk, L. (2021). EU-Ukraine Economic Relations In Context Of Desintegration Processes, Informatization And Innovative Development. *Journal of Information Technology Management*, 13, Special Issue, 1-19. [https://jitm.ut.ac.ir/article\\_82598.html](https://jitm.ut.ac.ir/article_82598.html).
- [24] The Index Economy-Gig Global. Cross-border freelancing trends that defined Q2 (2019). [https://pubs.payoneer.com/images/q2\\_global\\_freelancing\\_index.pdf](https://pubs.payoneer.com/images/q2_global_freelancing_index.pdf).
- [25] Tymoshenko, O., Kotsiubivska, K. (2020). Use of Information Technology in Countering COVID-19. *Business Inform*, 11, 263–268. <https://doi.org/10.32983/2222-4459-2020-11-263-268>.
- [26] UKRAINE: the impact of COVID-19 on the economy and society (vision of post-pandemic development in 2020-2024 through the eyes of experts and youth). 2020. 50 p.
- [27] Wang, Y., Liu, B. & Qi, Y. (2018). A Risk Evaluation Method with an Improved Scale for Tunnel Engineering. *Arabian Journal for Science and Engineering*, 43, 2053–2067. <https://doi.org/10.1007/s13369-017-2974-4>.
- [28] Williams, O.D. (2020). COVID-19 and Private Health: Market and Governance Failure. *Development* 63, 181–190. <https://doi.org/10.1057/s41301-020-00273-x>.
- [29] Yemelyanov, O., Petrushka, T., Symak, A., Trevoho, O., Turylo, A., Kurylo, O., Danchak, L., Symak, D., Lesyk L. (2020). Microcredits for Sustainable Development of Small Ukrainian Enterprises: Efficiency, Accessibility, and Government Contribution. *Sustainability*, 12, 6184. doi:10.3390/su12156184.
- [30] Zhosan, H. (2021). Development of business digitalization in the convention of the COVID-19 Pandemic. *Economy and Society*, (24). <https://doi.org/10.32782/2524-0072/2021-24-40>.

### **Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)**

-Sergii ILLIASHENKO analysed and interpreted the data, prepared the manuscript text.

-Olena BILOVODSKA performed the literature review, compiled the data and manuscript edition.

-Tetiana TSALKO performed the literature review and some of the remained analyses.

-Olesia TOMCHUK helped in manuscript preparation, formed visualization and supervised data.

-Svitlana NEVMERZHYTSKA performed some of the remained analyses and helped in visualization and data curation.

-Nataliia BUHAS helped in the literature review, manuscript preparation and edition

### **Creative Commons Attribution License 4.0 (Attribution 4.0 International, CC BY 4.0)**

This article is published under the terms of the Creative Commons Attribution License 4.0

[https://creativecommons.org/licenses/by/4.0/deed.en\\_US](https://creativecommons.org/licenses/by/4.0/deed.en_US)