

METHODOLOGICAL PRINCIPLES OF IMPLEMENTING ARTIFICIAL INTELLIGENCE INTO ORGANIZATIONAL MANAGEMENT SYSTEM

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The article examines the theoretical and methodological principles of integrating artificial intelligence into an organization's management system. It presents a cumulative model illustrating the impact of artificial intelligence on the organization's management mechanism, which identifies the subjects of influence, tools of influence, directions, and dimensions of influence. Additionally, it describes the challenges posed by the influence of artificial intelligence on the organization's management mechanism and outlines the main outcomes of this influence. The ways of improving management productivity in various dimensions (socio-technical, strategic-structural, innovative-organizational, task-oriented, information-system) have been systematized. The main results that the use of artificial intelligence offers to the organization have been highlighted, comprising the automation of routine tasks, the reallocation of working time to strategic and creative tasks, increased efficiency in decision-making through analytics and forecasting provided by artificial intelligence, improved external and internal communication, enhanced effectiveness in HR management, formulation of realistic and achievable strategies aligned with future changes, and the development of innovative products and services. An algorithm for introducing artificial intelligence into the organization's management system has been proposed. The allocation of 8 stages is substantiated as follows: formation of organizational culture; determination of the goals for implementing artificial intelligence; identification of the main performance indicators; establishment of an information base on the state of the management system; analysis of products using artificial intelligence; integration of artificial intelligence products into the management system; monitoring the results of artificial intelligence implementation; and conducting a management system audit.

The factors related to the development, implementation, and adaptation of artificial intelligence within the organization's management system at each stage of its implementation have been considered. These factors include: rethinking the interaction between people and machines in the work environment; awareness among management and staff; organizational support; openness to innovation; staff resistance to change; the presence of a system for disseminating best practices; availability of critical skills for artificial intelligence implementation; ensuring ethical components such as bias, confidentiality, and transparency; integration of model results into relevant business processes; compatibility with other available information systems; and the satisfaction level of stakeholders with the outcomes of artificial intelligence implementation.

References

1. A defining moment: How Europe's CEOs can build resilience to grow in today's economic maelstrom. URL: <https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/a-defining-moment-how-europes-ceos-can-build-resilience-to-grow-in-todays-economic-maelstrom> (Accessed 28 April 2023).
2. Bojinov, I. (2013). [Keep Your AI Projects on Track]. *Harvard Business Review*. November-December. Available at: <https://hbr.org/2023/11/keep-your-ai-projects-on-track> (date of access: 22.12.2023).

3. de Almeida, R. d. J. d. A. (2022). [The impact of Intelligent Systems on Management Control of 21st century Organizations]: Master in Management. Lisbon, 2022. 84 p. Available at: https://repositorio.iscte-iul.pt/bitstream/10071/25600/1/master_rita_jesus_almeida.pdf (date of access: 22.12.2023).
4. Davenport, T.H., Mittal, N. (2023). [Stop Tinkering with AI]. *Harvard Business Review*. January-February. Available at: <https://hbr.org/2023/01/stop-tinkering-with-ai> (date of access: 22.12.2023).
5. Dietzmann, C., Duan, Y. (2022). [Artificial Intelligence for Managerial Information Processing and Decision-Making in the Era of Information Overload]. *Hawaii International Conference on System Sciences*. 2022. Available at: <https://doi.org/10.24251/hicss.2022.720> (date of access: 22.12.2023).
6. Duchessi, P., O'Keefe, R., O'Leary, D. (1993). [A Research Perspective: Artificial Intelligence, Management and Organizations]. *Intelligent Systems in Accounting, Finance and Management*. 1993. Vol. 2, no. 3. P. 151–159. Available at: <https://doi.org/10.1002/j.1099-1174.1993.tb00039.x> (date of access: 22.12.2023).
7. Eapen, T.T., Finkenstadt, D.J., Folk, J., Venkataswamy, L. (2013). [How Generative AI Can Augment Human Creativity]. *Harvard Business Review*. July-August. Available at: <https://store.hbr.org/product/how-generative-ai-can-augment-human-creativity/R2304C> (date of access: 22.12.2023).
8. Eriksson, M., Djoweini, C. (2020). [Artificial Intelligence's Impact on Management: A literature review covering artificial intelligence's influence on leadership skills and managerial decision-making processes] : thesis. 2020. Available at: <http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-279737> (date of access: 22.12.2023).
9. European Agency for Safety and Health at Work. (2022). [Artificial intelligence for worker management: an overview]. Bilbao, 2022. Available at: https://osha.europa.eu/sites/default/files/summary-artificial-intelligence-worker-management-EN_0.pdf (date of access: 22.12.2023).
10. Leonardi, P. (2023). [Helping Employees Succeed with Generative AI]. *Harvard Business Review*. November-December. Available at: <https://hbr.org/2023/11/helping-employees-succeed-with-generative-ai> (date of access: 22.12.2023).
11. McAfee, A., Rock, D., Brynjolfsson, E. (2023). [How to Capitalize on Generative AI]. *Harvard Business Review*. November-December. Available at: <https://store.hbr.org/product/how-to-capitalize-on-generative-ai/S23061> (date of access: 22.12.2023).
12. Noponen, N. (2019). [Impact of Artificial Intelligence on Management]. *EJBO Electronic Journal of Business Ethics and Organization Studies*. 2019. Vol. 24, no. 2. P. 43–50. Available at: http://ejbo.jyu.fi/pdf/ejbo_vol24_no2_pages_43-50.pdf (Accessed 22 December 2023).
13. Park, W. (2018). [Artificial intelligence and Human resource management : New perspectives and challenges]. *Kyung Hee University. School of Management*. P. 16. Available at: <https://www.jil.go.jp/profile/documents/w.park.pdf> (date of access: 22.12.2023).
14. Résio, M.C. (2020). [Artificial Intelligence in Strategic Business Management: the case of auditing]: Master in Management. Lisbon, 2020. 85 p. Available at: https://repositorio.iscte-iul.pt/bitstream/10071/22331/1/master_mariana_catarino_resio.pdf (date of access: 22.12.2023).
15. Riecken, H. (2022) [AI in performance management: a game-changing development?]. Available at: https://essay.utwente.nl/91198/1/Riecken_BA_BMS.pdf (date of access: 22.12.2023).
16. Tamayo, J., Doumi, L., Goel, S., Kovács-Ondrejko, O., Sadun, R. (2023). [Reskilling in the Age of AI]. *Harvard Business Review*. September-October. Available at: <https://hbr.org/2023/09/reskilling-in-the-age-of-ai> (date of access: 22.12.2023).
17. Verbivska, L.V. (2023). *Zastosuvannia instrumentiv shuchnoho intelektu pry upravlinni konkurentospromozhnistiu pidpriemstva*. [Application of artificial intelligence tools

in managing the competitiveness of the enterprise]. *Problemy suchasnykh transformatsij. Seriia: ekonomika ta upravlinnia*, no 10. DOI: <https://doi.org/10.54929/2786-5738-2023-10-04-06> (Accessed 22 December 2023) (in Ukrainian).

18. Vinnikova, N. (2022). *Shtuchnyj intelekt u konteksti hlobal'noho upravlinnia*. [Artificial intelligence in the context of global management]. *Politikus*, no 3. pp. 65-70. Available at: http://politicus.od.ua/3_2022/10.pdf (Accessed 22 December 2023) (in Ukrainian).

19. Karpenko, O., Karpenko, Yu. (2021). *Shtuchnyj intelekt iak instrument publichnoho upravlinnia sotsial'no-ekonomichnym rozvytkom: smart-infrastruktura, tsyfrovi systemy biznes-analityky ta transferty*. [Artificial intelligence as a tool of public management of socio-economic development: smart infrastructure, digital business intelligence systems and transfers]. *Derzhavne upravlinnia: udoskonalennia ta rozvytok*, no 10. Available at: <https://doi.org/10.32702/2307-2156-2021.10.2> (Accessed 22 December 2023) (in Ukrainian).

20. Karpyak, A. (2022). *Funktsionuvannia ta rozvytok rynku informatsijnykh tekhnolohij na osnovi tsinnisnoho pidkhodu*. PhD, Diss. [Functioning and development of the information technology market based on a value approach. PhD. Diss.]. Lviv. Available at: <https://pnu.ua/sites/default/files/2022/radaphd/20806/disertaciya-karpyakao.pdf> (Accessed 22 December 2023) (in Ukrainian).

21. Kovtunenکو, Yu. (2019). *Zastosuvannia shtuchnoho intelektu u systemi upravlinnia pidpriemstvom: problemy ta perevahy*. [Application of artificial intelligence in the enterprise management system: problems and advantages]. *Economic journal Odessa polytechnic university*, no 2(8). pp. 93-99. Available at: <https://economics.net.ua/ejopu/2019/No2/93.pdf> (Accessed 22 December 2023) (in Ukrainian).

22. Logvinenko, B. (2022). *Doslidzhennia instrumentiv shtuchnoho intelektu v upravlinni povedinkoiu ekonomichnykh ahentiv u tsyfrovomu prostori na pidpriemstvakh*. [Research of artificial intelligence tools in managing the behavior of economic agents in the digital space at enterprises]. *Visnyk Kharkivs'koho natsional'noho universytetu imeni V. N. Karazina*, no 15. pp. 45-53. Available at: <file:///C:/Users/Adm/Downloads/20840-Article%20Text-37221-1-10-20221007.pdf> (Accessed 22 December 2023) (in Ukrainian).

23. Mashliy, G., Mosii, O., Pelcher, M. (2019). *Doslidzhennia upravlins'kykh aspektiv vykorystannia shtuchnoho intelektu*. [Study of managerial aspects of using artificial intelligence]. *Halys'kyj ekonomichnyj visnyk*, tom 57. no 2. pp. 80-89. Available at: <https://galicianvisnyk.tntu.edu.ua/pdf/57/601.pdf> (Accessed 22 December 2023) (in Ukrainian).

24. Chornous, G.O. (2015). *Modeliuvannia protsesu pryjniattia upravlins'kykh rishen' v sotsial'no-ekonomichnykh systemakh na osnovi intelektual'noho analizu danykh*. Doct, Diss. [Modeling of the management decision-making process in socio-economic systems based on intellectual data analysis. Doct. Diss.]. Kyiv. Available at: https://scc.knu.ua/upload/iblock/af3/dis_Chornous%20G.O..pdf (Accessed 22 December 2023) (in Ukrainian).

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