INNOVATIONS IN PUBLISHING, PRINTING AND MULTIMEDIA TECHNOLOGIES, 2024
DOI 10.59476/ilpmt2024.100-106

CRITERIA FOR SELECTING ARTIFICIAL INTELLIGENCE TOOLS

Lina Šarlauskienė, Samanta Dagytė
Kauno kolegija HEI, Lithuania

Abstract
Artificial Intelligence (AI) represents a transformative force across numerous sectors, from healthcare and finance to automotive and public services. The selection and deployment of AI tools are critical to leveraging this technology's potential while adhering to ethical standards, regulatory compliance, and ensuring societal benefit. The European Union (EU) has been at the forefront of establishing frameworks and criteria to guide the development, deployment, and selection of AI systems to foster innovation while protecting citizens' rights and societal values. The EU's proactive stance in establishing these criteria aims to balance innovation with ethical considerations and societal welfare, setting a benchmark for responsible AI development and deployment globally. The aim of the article is to present general criteria for the selection of artificial intelligence tools, as well as those specific to the field of publishing. The research was carried out based on the analysis of scientific and other sources. The results of the study can be useful for organizations and individuals that must be interested in selecting and using the right AI tools.
Keywords: *artificial intelligence, selection criteria, EU regulations, publishing.*

Introduction

The rapid development of artificial intelligence (AI) in various areas of professional activity and life makes it possible to achieve the required results faster, easier and more innovatively, but it also obliges us to use AI responsibly. Defining AI is sometimes problematic because AI mimics human intelligence and it is conceivable that AI has human-like abilities (Devi, Manjula, Pattewar 2023). Scientists identify types of AI based on levels of task performance and say that AI recently lacks the ability to make decisions and reason like a human. AI is like a collection of certain algorithms and data, it is also called a branch of science (Tarasevičienė, Šutienė 2022). It is a combination of tools and processes that create results according to the needs of users (Veale, Matus, Gorwa 2023). Artificial intelligence helps to efficiently perform functions that require analysis, implementation of ideas

and solutions, and competitive advantage (Mhlanga 2023). Currently, there is no unified definition of AI, so it is worth referring to the definition provided by the expert group appointed by the European Commission: "Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications)." (High-level expert group on artificial intelligence, 2019a).

It is extremely important to respond to the development of artificial intelligence, the tools being created, their functions and processes, to follow reliable information and to adapt it to the expected needs. Artificial intelligence tools create opportunities for users to use chatbots, create texts, videos, photos and music, plan communication campaigns, predict results, perform data searches, and implement technical processes. In the long run, society will adapt to changing personal skills, embrace new challenges, adopt artificial intelligence in processes, and make greater use of the aforementioned functions. A study by the International Monetary Fund (2024) revealed that artificial intelligence could affect 60 percent of jobs, optimize work, and most of all improve the provision of services in the field of health and education. Advanced economies should focus on innovation and integration of artificial intelligence when developing regulatory frameworks for the use of AI. There are many aspects to consider when using artificial intelligence, including legal, ethical and social aspects.

As the availability and use of AI tools increase, legal and ethical issues may arise, making it critical to select and use appropriate and reliable AI systems and tools. The criteria for the selection of artificial intelligence systems and tools must be compatible with the country's and European Union's regulation in the field of AI, as well as meet the requirements of the specific field and other important aspects. The purpose of the article is to present general criteria for the selection of artificial intelligence tools, as well as those specific to the field of publishing. The research was carried out based on the analysis of scientific and other sources.

Methodology and equipment

The selection criteria are applied in various fields. "A criterion is a sign, a rule according to which something is evaluated, determined, classified" (Visuotinė lietuvių enciklopedija 2024). Selection criteria are rules or guide-

lines used to select the most appropriate option from a group of alternatives. For example, science selection criteria include various aspects necessary for effective dissemination and progress (Reyes, Moraga 2020). In the field of journal selection, publication quality criteria are very important for the success of publishing and for researchers due to the evaluation of the dissemination of results (Šarlauskiene, Šarlauskas 2018). Selection criteria can be grouped by importance using a decision matrix where a list of choices is evaluated and prioritized. First, a list of weighted priorities is created and each option is evaluated against those priorities (Tague 2023). Lists of criteria and their priorities can be compiled by professionals or expert groups in the analysed field, and the help of AI tools can also be used. In this study, the list of criteria for the selection of artificial intelligence tools is compiled based on the analysis of scientific and other sources, giving priority to the regulation of the European Union in the field of artificial intelligence and aspects of the publishing field.

Presentation of research results

The selection criteria for artificial intelligence according to EU regulations are based on a tiered compliance framework that categorizes AI systems into different risk levels. The EU Artificial Intelligence Act (2024) defines four levels of risk for AI systems: unacceptable, high, limited, and minimal or no risk:

- Unacceptable Risk: AI systems posing unacceptable risks, such as those threatening people's safety, livelihood, and rights, are prohibited.
- High-Risk: AI systems falling into the high-risk category, used in critical infrastructure or law enforcement, face strict requirements. These requirements include aspects like risk assessment, data quality, documentation, transparency, human oversight, and accuracy.
- Limited Risk: AI systems posing limited risks, such as chatbots, are subject to transparency obligations to ensure users are aware that they are interacting with AI and not humans.
- Minimal or No Risk: AI systems with minimal risk, like games and spam filters, can be used without stringent regulatory requirements.

These risk levels determine the compliance obligations for developers and deployers of AI systems, with the level of obligations varying based on the risk posed by the AI system to people's safety, security, or fundamental rights. The EU AI Act aims to ensure the trustworthy and responsible use of AI systems by unifying regulations across the EU Member States and covering all AI systems impacting people in the EU, regardless of where they are developed or deployed.

The High-Level Expert Group on AI (2019b) presented *Ethics Guidelines for Trustworthy Artificial Intelligence*. According to the Guidelines, trustworthy AI should be not only lawful but also ethical and robust. The Guidelines put forward a set of 7 key requirements that AI systems should meet to be deemed trustworthy:

1. Human agency and oversight: AI systems should empower human beings, allowing them to make informed decisions and fostering their fundamental rights;
2. Technical Robustness and safety: AI systems need to be resilient and secure;
3. Privacy and data governance;
4. Transparency: the data, system and AI business models should be transparent;
5. Diversity, non-discrimination and fairness;
6. Societal and environmental well-being: AI systems should benefit all human beings, including future generations;
7. Accountability: Mechanisms should be put in place to ensure responsibility and accountability for AI systems and their outcomes.

For the practical application of these criteria for the selection of AI tools or systems, it has been developed *Assessment List for Trustworthy AI (*High-level expert group on artificial intelligence 2020). This list is intended for self-evaluation purposes.

It is important to consider all of the 7 aspects, but it is necessary to analyze and invest in data protection and policies that specify how data is collected, for what purposes and how it is stored. According to Felzmann et al. (2020), attention to data protection becomes one of the most relevant aspects when choosing to use artificial intelligence, since new tools appear every day, supply is high and demand is increasing, it is important to remain critical and assess the risks. This is one of the reasons why it is important to select AI tools to protect the data you provide. Thousands of people around the world are affected by the loss of sensitive personal data. Data leaks affect companies' reputations and finances, and may lead to legal problems (Kaur, Uslu, and Durresi 2021). Although an individual cannot always ensure the security of his data and ensure that the data stored in the company will be safe, when choosing artificial intelligence tools, it is possible to conduct an analysis, learn more about a specific tool, its reputation, accountability, crisis management, etc. Defining AI selection criteria can help avoid risks and frustrations.

EU regulation of the use of AI covers all areas of activity and can help solve the problems of evaluation and selection of AI tools. However, the cri-

teria for selecting AI tools for individual areas of activity, which are specific to a specific area, may also be important.

Ethical aspects of AI in publishing encompass concerns such as plagiarism, authorship attribution, content originality, and maintenance of research integrity. AI tools like ChatGPT can aid in manuscript preparation by saving time, generating accurate text, and ensuring proper citations. However, there are risks of inaccuracies, lack of originality, and questions regarding authorship when AI is heavily involved in writing (Kurian et al, 2023; Dupps 2023; Smeds et al, 2023; Pividori & Greene, 2023). Guidelines from publishers and organizations emphasize the responsibility of authors to oversee AI-generated content, disclose AI use, and maintain research integrity. While AI can enhance research productivity, it should not replace human critical thinking and expertise to uphold the quality and ethical standards of academic publishing. Vigilance and ethical awareness are crucial to harness the benefits of AI in publishing while mitigating potential risks.

Since EU documents do not provide specific recommendations for the use of artificial intelligence tools in publishing, most publishers have provided their recommendations and guidelines. Authorship issues received the most attention. The research shows that even 98 percent of Journals have banned generative AI as an author (Pongrac, 2024). COPE (Committee on Publication Ethics) also states that AI tools cannot be listed as authors of an article (https://publicationethics.org/cope-position-statements/ai-author).

Other potential risks of using AI in publishing, as in other fields, can include AI integration with existing systems, cost of AI implementation, lack of skilled talent in the publishing industry, the publishing industry's resistance to change. Integrating AI systems with existing workflows, processes, and technology can be challenging, requiring significant resources, technical expertise, and training for employees.

The described ethical and other aspects of AI tools can serve as selection criteria for AI tools, as they are relevant for the selection and use of appropriate AI tools in publishing. Ranking these tools according to their importance or making a list of their priorities would not be appropriate in this case, because both the general EU requirements and the relevant and independent aspects of publishing are important.

Conclusions

- The research results showed that the list of basic and general selection criteria for artificial intelligence tools can be compiled according to the EU AI Act, which divides artificial intelligence systems into different risk

levels, and 7 requirements of the Ethics Guidelines for Trusted Artificial Intelligence.

- In addition to the general criteria, the selection criteria of AI tools for specific fields of activity are also important. Although scientific sources analyze individual aspects of the ethics, selection and use of AI tools, the most common ones can be distinguished. Ethical aspects of AI in publishing encompass concerns such as plagiarism, authorship attribution, content originality, and maintaining research integrity. Integrating AI with existing systems, the cost of implementing AI, the lack of skilled talent in the publishing industry, and the publishing industry's resistance to change are other potential risks of using AI in publishing that need to be considered when selecting AI tools.
- With the rapid development of AI and the active debate about the ethical and appropriate use of AI tools, more detailed and specific information will emerge in the future for various fields and also for publishing.

List of references

1. Devi, K. V., Manjula, V., & Pattewar, T. (2023). *ChatGPT: Comprehensive Study On Generative AI Tool*. Academic Guru Publishing House.
2. Dupps Jr, W. J. (2023). Artificial intelligence and academic publishing. *Journal of Cataract & Refractive Surgery*, *49*(7), 655-656.
3. Felzmann, H., Fosch-Villaronga, E., Lutz, C., & Tamò-Larrieux, A. (2020). Towards transparency by design for artificial intelligence. *Science and Engineering Ethics*, 26 (6), 3333-3361.
4. High-level expert group on artificial intelligence. (2019a). *A definition of AI: Main capabilities and scientific disciplines*. https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=60651
5. High-level expert group on artificial intelligence. (2019b). *Ethics Guidelines for Trustworthy AI*, *6*. https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai
6. High-level expert group on artificial intelligence. (2020). *Assessment List for Trustworthy AI (ALTAI)*. https://digital-strategy.ec.europa.eu/en/library/assessment-list-trustworthy-artificial-intelligence-altai-self-assessment
7. International Monetary Fund. (2024). *Gen-AI: Artificial Intelligence and the Future of Work*. https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2024/01/14/Gen-AI-Artificial-Intelligence-and-the-Future-of-Work-542379?cid=bl-com-SDNEA2024001
8. Kaur, D., Uslu, S., & Durresi, A. (2021). Requirements for Trustworthy Artificial Intelligence – A Review. In L. Barolli, K. F. Li, T. Enokido, &

M. Takizawa (Eds.). *Advances in Networked-Based Information Systems* (pp. 105–115). https://doi.org/10.1007/978-3-030-57811-4_11
9. Kurian, N., James, D., Varghese, V. S., Cherian, J. M., & Varghese, K. G. (2023). Artificial intelligence in scientific publications. *The Journal of the American Dental Association*, *154*(12). doi: 10.1016/j.adaj.2023.03.015
10. Mhlanga, D. (2023). Artificial intelligence and machine learning for energy consumption and production in emerging markets: a review. *Energies*, 16(2), 745.
11. Midhun Moorthi C, Dr. K. Vimala Devi, Dr. V. Manjula, Tareek Pattewar. (2023). ChatGPT: Comprehensive Study On Generative AI Tool. (n.p.): Academic Guru Publishing House.
12. Pividori, M., & Greene, C. S. (2023). A publishing infrastructure for AI-assisted academic authoring. *BioRxiv*. doi: 10.1101/2023.01.21.525030
13. Pongrac, H, Z. (2024). AI in scholarly communication. *Food technology and biotechnology*, *62*(1), 127-129.
14. Reyes Rodríguez, A., & Moraga Muñoz, R. (2020). Criterios de selección de una revista científica para postular un artículo: breve guía para no 'quemar'un paper. *Sophia*, 16(1), 93-109.
15. Šarlauskienė, L., & Šarlauskas, A. (2018). Publishing quality of scholarly journals. *Inovacijos leidybos, poligrafijos ir multimedijos technologijose*. https://ojs.kaunokolegija.lt/index.php/TMPK/article/view/233
16. Smeds, M. R., Mendes, B., O'Banion, L. A., & Shalhub, S. (2023). Exploring the pros and cons of using artificial intelligence in manuscript preparation for scientific journals. *Journal of Vascular Surgery Cases, Innovations and Techniques*, *9*(2).
17. Tague, N. R. (2023). *The quality toolbox*. Quality Press.
18. Tarasevičienė, A., & Šutienė, K. (2022). Intelektikos pagrindai. Technologija. https://doi.org/10.5755/e01.9786090218068
19. The EU Artificial Intelligence Act. (2024). https://artificialintelligenceact.eu/
20. Veale, M., Matus, K., & Gorwa, R. (2023). AI and global governance: Modalities, rationales, tensions. *Annual Review of Law and Social Science*, 19, 255-275.
21. Visuotinė lietuvių enciklopedija. (2024). *Kriterijus*. https://www.vle.lt/straipsnis/kriterijus-1/