Artificial Intelligence and Social Diversity: Demographic Aspects and Security Challenges

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Abstract

Recent advances in artificial intelligence (AI) technologies are increasingly shaping everyday life. This study examined patterns of AI use in the Czech Republic and their relationship with demographic factors. A representative sample of 521 respondents aged 15 and above was surveyed between March and June 2024 using online and assisted interviews. Key variables included gender, age (adolescence/early adulthood, middle adulthood, late adulthood, old age), and highest level of education (elementary, vocational, secondary, tertiary). Results show that intensive use of AI accounts is limited: only a small proportion of respondents use AI daily or very frequently, while roughly one-third use AI occasionally or rarely. Translation tools were the most widely adopted category (≈32%), followed by text generation tools (≈22%). Use of grammar checkers, image generators, and automotive AI remains marginal. Gender was not significantly associated with AI use. Age and education were significant predictors: younger and middle-aged adults reported higher engagement with text generation and translation tools, whereas older adults and seniors showed lower adoption and more concerns about AI. Similarly, higher education was associated with more frequent use, while vocationally trained respondents were less engaged and more apprehensive. These findings highlight that age and education are key determinants of AI adoption. Barriers such as uncertainty, limited knowledge, and fears of technology limit broader engagement. From a security perspective, uneven adoption and varying digital competencies pose challenges for safe and responsible AI use, underscoring the need for targeted educational interventions to reduce risks associated with misinformation, privacy breaches, and unequal access to AI benefits.

Keywords: artificial intelligence, AI adoption, digital literacy, demographic factors, age differences, education level, technology use, AI tools, social diversity, security challenges

Introduction

In recent years, the rapid development of artificial intelligence (AI)[1] technologies[2] has profoundly impacted numerous domains of human activity.[3] However, it simultaneously presents significant risks.[4]

The rise of AI-generated content raises critical ethical and regulatory questions. Key concerns include the acceptability of creating content that may intentionally mislead or harm, the moral responsibility of developers and users, and the broader societal implications for democracy and trust in institutions.[5] Moreover, AI systems facilitate the creation of sophisticated plagiarised and auto-plagiarised content that is increasingly difficult to detect through conventional mechanisms.[6] What long remained a recognisable ethical breach within defined academic standards[7] now expands into a qualitatively new terrain, in which the very notions of authorship, originality, and attribution are destabilised by generative automation. As a result, misconduct that once relied on deliberate copying becomes embedded in ordinary knowledge practices, challenging existing frameworks of responsibility and raising urgent questions about how integrity can be sustained in environments where textual production itself is technologically co-authored.

The aim of this article is to map the extent of the use of artificial intelligence (AI)-based services and tools among Czech users, to analyse differences in the use of these technologies according to age, educational attainment, and gender, and to identify the main reasons for the rejection or non-use of AI services. Particular attention is paid to identifying which types of AI tools (e.g., text generation, translation, grammar checking, image generation, etc.) are most widespread and how their use varies across different sociodemographic groups.

1 This contribution is a result of the project Odolnost příslušníků Policie České republiky vůči dezinformačním vlivům a možnosti posilování jejich rezistence prostřednictvím vzdělávání (VK01020187), abbreviated as DEZINFOPOL, which was supported by the Ministry of the Interior of the Czech Republic under the programme Open Calls in Security Research 2023–2029, abbreviated as OPSEC. We note that definitions of AI vary across the literature. See: Vladimír Nulíček, 'Umělá Inteligence Na Základních a Středních Školách v ČR', *Lidský Kapitál a Investice Do Vzdělání: Umělá Inteligence a Strategické Změny v Oblasti Vzdělání*, 2024, 75–90, https://doi.org/10.37355/LK-2023-05; Martin Jurásek and Pavel Wawrosz, 'The use of chatbots in the Czech Republic with concentration on the Czech public administration', *International Journal of Public Administration, Management and Economic Development* 7, no. 2 (2022): 62–78; Kateřina Turková et al., 'Adapting to the Future: The Use of AI Tools and Applications in University Education and a Call for Transparent Rules and Guidelines', *International Journal for Educational Integrity* 21, no. 1 (2025): 29, https://doi.org/10.1007/s40979-025-00203-9.For the purposes of this study, we adopt the following working definition of artificial intelligence (AI) as a pragmatic framework for this study: intelligence displayed or simulated through code or machines. These systems may exist as software applications—such as chatbots, search engines, image analysis tools—or be embedded in hardware, including robots, vehicles, and Internet of Things devices. AI encompasses a range of techniques, including machine learning, neural networks, natural language processing, and computer vision, which are applied across fields as diverse as medicine, industry, and digital communication. One of AI's key capabilities is the analysis of large volumes of data to generate predictions or create content, a feature that also opens the door to potential misuse, particularly in the dissemination of false information and public manipulation.

2 Jurásek and Wawrosz, 'The use of chatbots in the Czech Republic with concentration on the Czech public administration'; Nulíček, 'Umělá Inteligence Na Základních a Středních Školách v ČR'; Turková et al., 'Adapting to the Future'; Andreas Kaplan, *Artificial Intelligence, Business and Civilization: Our Fate Made in Machines*, 1st ed., Routledge Focus on Business and Management (Routledge, 2022).

3 Mark Coeckelbergh, *Etika umělé inteligence*, 1st ed., trans. Sylva Ficová (Filosofia, 2023).

4 Dede Irman Pirdaus and Dhika Surya, 'Artificial Intelligence in Politics: Opportunities and Challenges for Digital Democracy', *International Journal of Humanities, Law, and Politics* 3, no. 2 (2025): 42–45, https://doi.org/10.46336/ijhlp.v3i2.217.

5 Coeckelbergh, *Etika umělé inteligence*.

6 As students employ AI to produce texts, institutions (including universities) rely on other algorithms to verify their authenticity. This creates a 'dual mediation of knowledge', in which responsibility is diffused across human and machine agency. Ethical questions consequently shift from individual integrity to collective responsibility for maintaining trust in knowledge. Tomáš Foltýnek and Philip M. Newton, 'What Does YouTube Advise Students About Bypassing AI-Text Detection Tools? A Pragmatic Analysis', *Journal of Academic Ethics* 24, no. 1 (2026): 8, https://doi.org/10.1007/s10805-025-09675-3.

7 Dominik Opatrný, 'K Etickým Aspektům Tzv. Autoplagiátů: Aneb Technologie Zpracování Vědeckého Recyklátu', *Caritas et Veritas* 5, no. 1 (2015): 42–50, https://doi.org/10.32725/cetv.2015.006.

Technology as a Cultural and Anthropological Force

The new digital technologies generate foundational conditions for all human activity at every level. They are potentially disruptive unless new goals are aligned with emergent technological imperatives.[8] The internet exemplifies this shift by fundamentally transforming communication and enabling unprecedented access to human knowledge and information that was previously difficult and slow to obtain.[9] While earlier technologies generally operated within relatively stable social, ethical, and cultural frameworks, artificial intelligence represents a qualitative break due to its scale, autonomy, and capacity to generate and manipulate information. AI should therefore not be understood merely as a neutral instrument but as a technological actor that actively mediates social practices as well as moral and epistemic values. Through real-time interaction, autonomous decision-making, and generative capacities, AI intervenes in public opinion formation, social norms, and institutional processes, thereby amplifying its societal and ethical implications. Its abilities in autonomous learning, content generation, and large-scale predictive analysis allow AI to adapt to new data and operate across domains, intensifying both its impact and ethical complexity beyond that of previous technologies. In line with McLuhan's insight that 'the medium is the message',[10] AI functions as a cultural environment within which perception, cognition, and experience are restructured. This development resonates with Ellul's warning that technology tends toward autonomy, transforming humans into 'functions of their tools'[11] and challenging humanist conceptions of freedom, reason, and moral agency.

Recent research[12] conceptualises AI as part of a new technological ecology in which humans, machines, and institutions interact dynamically and often unpredictably. Within this ecology, AI emerges as an actor that contributes to meaning-making and moral interpretation, co-shaping understandings of truth, responsibility, and the good.[13] Generative AI systems such as ChatGPT thus operate as societal actors that not only represent but also actively produce values and meanings, increasingly perceived as cultural actors influencing norms, political positions, and conceptions

8 Marshall McLuhan and Ivo Pondělíček, *Člověk, média a elektronická kultura: výbor z díla*, 1st ed. (Jota, 2000).

9 Petr Nutil, *Média, lži a příliš rychlý mozek: průvodce postpravdivým světem*, 1st ed. (Grada, 2018).

10 McLuhan and Pondělíček, *Člověk, média a elektronická kultura*.

11 Jacques Ellul, *La Technique: Ou, L'enjeu Du Siècle*, 2e éd. rev., Classiques Des Sciences Sociales (Economica, 1990).

12 Victor Galaz et al., 'Artificial Intelligence, Systemic Risks, and Sustainability', *Technology in Society* 67 (November 2021): 101741, https://doi.org/10.1016/j.techsoc.2021.101741; Fabio Y. S. Motoki et al., 'Assessing Political Bias and Value Misalignment in Generative Artificial Intelligence', *Journal of Economic Behavior & Organization* 234 (June 2025): 106904, https://doi.org/10.1016/j.jebo.2025.106904; Jurásek and Wawrosz, 'The use of chatbots in the Czech Republic with concentration on the Czech public administration'; Nulíček, 'Umělá Inteligence Na Základních a Středních Školách v ČR'; Turková et al., 'Adapting to the Future'; Vaclav Moravec et al., 'Everyday Artificial Intelligence Unveiled: Societal Awareness of Technological Transformation', *Oeconomia Copernicana* 15, no. 2 (2024): 367–406, https://doi.org/10.24136/oc.2961; Martin Lnenicka and Renata Machova, 'A Mixed-Methods Analysis of Artificial Intelligence Adoption and Perceived Impacts in Czech Municipal Administration', *Transforming Government: People, Process and Policy*, ahead of print, 8 October 2025, https://doi.org/10.1108/TG-06-2025-0175; Daniel Šárovec, 'Political Actors in the Age of Generative Artificial Intelligence: The Czech Perspective', *Acta Informatica Pragensia* 14, no. 2 (2025): 282–95, https://doi.org/10.18267/j.aip.272; Mike Zajko, 'Artificial Intelligence, Algorithms, and Social Inequality: Sociological Contributions to Contemporary Debates', *Sociology Compass* 16, no. 3 (2022): e12962, https://doi.org/10.1111/soc4.12962; Lucie Zormanova and Hana Vavříková, 'Attitudes of Czech and Polish Teachers Towards the Use of Artificial Intelligence in Schools', *International Journal of Research in E-Learning*, 4 July 2025, 1–23, https://doi.org/10.31261/IJREL.2025.11.1.02; Michal Konečný et al., 'The Use of Artificial Intelligence in Marketing: A Case Study from the Czech Republic', *Strategic Management*, no. 00 (2025): 97–97, https://doi.org/10.5937/StraMan2500010K; Tomáš Javorčík and Josef Malach, 'Conditions and Bases of Incorporation of Artificial Intelligence into Czech School Environment', *Proceedings of the European Conference on the Impact of Artificial Intelligence and Robotics (ECIAIR 2019)* (Normandie / France), 2019, https://www.researchgate.net/publication/338209631_Conditions_and_Bases_of_Incorporation_of_Artificial_Intelligence_into_Czech_School_Environment.

13 Iason Gabriel, 'Artificial Intelligence, Values, and Alignment', *Minds and Machines* 30, no. 3 (2020): 411–37, https://doi.org/10.1007/s11023-020-09539-2.

of autonomy and truth.[14] Liu at al.[15] regard AI as a pivotal moment in cultural evolution, whereby technology begins to co-shape human ethical and social environments.

As an actor embedded in decision-making processes, AI acquires an anthropological dimension, transforming humans into components of a broader socio-technical decision-making ecosystem.[16] AI represents a civilisational phenomenon, provoking fundamental questions regarding humanity's relationship with its own creations.[17] By mediating relationships between citizens and the state, AI reshapes notions of dignity, rights, responsibility, and trust. From the perspective of the philosophy of technology, this shift signals a redistribution of agency within institutional contexts. Andrews warns that the mechanisation of decision-making risks dehumanising public administration and undermining the cultural legitimacy of institutions, as authority and responsibility become increasingly displaced onto technological actors.[18]

The absence of a unified framework for understanding AI risks fragmented knowledge and undermines society's collective capacity to navigate the digital world. Philosophically, this raises the question of the 'ontological status of humans in relation to autonomous systems and the knowability of digital reality'.[19] AI is increasingly integrated into the fundamental structure of society'—the ensemble of institutions that allocate benefits, rights, and responsibilities—thus functioning as a cultural and anthropological force shaping human autonomy and societal relationships.[20]

In education, AI emerges as a cultural phenomenon challenging traditional anthropological categories of work, learning, and intellectual integrity. Digitalisation transforms the relationships between student, knowledge, and institution, relocating education from formal structures to online environments where technology mediates ethical conduct.[21] Educational practices must cultivate an understanding of how algorithms reflect values and power, as AI 'cannot easily be asked to explain its decision-making process'.[22]

Artificial Intelligence and the Transformation of Knowledge and Responsibility

Language and speech function as primary media through which meaning is articulated, accumulated, and transmitted, enabling the preservation and dissemination of human experience and knowledge.[23]

The emergence of AI as a technological actor fundamentally transforms these processes by reshaping modes of knowing, communication, and decision-making. Algorithmic systems increasingly influence what people read, how they communicate, and how reality is interpreted. As Luciano

14 Motoki et al., 'Assessing Political Bias and Value Misalignment in Generative Artificial Intelligence'; Nicholas Kluge Corrêa et al., *Worldwide AI Ethics: A Review of 200 Guidelines and Recommendations for AI Governance*, version 7, 10, no. 4 (2022), https://doi.org/10.48550/ARXIV.2206.11922.

15 Albert Chun-Chen Liu et al., *Understanding Artificial Intelligence: Fundamentals and Applications* (Wiley-IEEE Press, 2022).

16 Michael Veale, 'Logics and Practices of Transparency and Opacity in Real-World Applications of Public Sector Machine Learning', *arXiv Preprint arXiv:1706.09249*, 2017, https://arxiv.org/pdf/1706.09249.

17 Jiaming Ji et al., 'Ai Alignment: A Comprehensive Survey', *arXiv Preprint arXiv:2310.19852*, 2023, https://alignmentsurvey.com/uploads/AI-Alignment-A-Comprehensive-Survey.pdf.

18 Pia Andrews et al., 'A Trust Framework for Government Use of Artificial Intelligence and Automated Decision Making', version 1, preprint, arXiv, 2022, https://doi.org/10.48550/ARXIV.2208.10087.

19 Peter Slattery et al., 'The AI Risk Repository: A Comprehensive Meta-Review, Database, and Taxonomy of Risks From Artificial Intelligence', version 2, preprint, arXiv, 2024, 15, https://doi.org/10.48550/ARXIV.2408.12622.

20 Thomas Ferretti, 'Value Alignment Without Institutional Change Cannot Prevent the Societal Risks of Artificial Intelligence', *LSE Public Policy Review* 3, no. 3 (2024): 2, https://doi.org/10.31389/lseppr.113.

21 Foltýnek and Newton, 'What Does YouTube Advise Students About Bypassing AI-Text Detection Tools?'

22 Jón Danielsson et al., 'Artificial Intelligence and Systemic Risk', *Journal of Banking & Finance* 140 (July 2022): 5, https://doi.org/10.1016/j.jbankfin.2021.106290.

23 McLuhan and Pondělíček, *Člověk, média a elektronická kultura.*

Floridi[24] argues, this development gives rise to an 'infosphere' in which human and machine knowledge are deeply intertwined. The result is an epistemological paradox: while the volume of available data expands, the origins, structures, and meanings of knowledge become increasingly opaque, weakening personal responsibility and obscuring questions of agency and accountability. As an epistemic actor, AI does not merely reproduce information but actively constructs meaning, shaping public opinion and interpretive frameworks. Knowledge mediated by AI is therefore not neutral but conditioned by data structures, design choices, and social inequalities. Galaz et al.[25] highlight systemic risks of 'algorithmic bias and allocative harms', demonstrating how AI-mediated knowledge production implicates justice and responsibility in the digital age. This shift intensifies ethical concerns surrounding moral delegation: transferring judgement to technological actors' risks diminishing human discernment, judgement, and conscience—capacities that cannot be fully algorithmised. The need for critical engagement with AI authority thus becomes central, understood as the ability to resist immediacy, dominant narratives, and automated outputs.[26]

AI also amplifies the collective character of knowledge production by automating synthesis, analysis, and dissemination at unprecedented scales and speeds. Unlike earlier technologies, AI as an actor generates new content, detects patterns across vast datasets, and interacts autonomously with users, rendering the epistemic chain both distributed and dynamic. As Veale notes, responsibility in such systems cannot be individualised but must be understood as collective and procedural, involving humans as co-authors rather than sole agents of knowledge and moral judgement.[27] Gabriel[28] further emphasises that technical and normative dimensions of AI are inseparable: how AI operates is inseparable from the values it implicitly promotes, shifting moral authority toward systems that 'optimise' values algorithmically.

This redistribution of epistemic and moral agency complicates responsibility across institutional contexts. Corrêa et al. highlight the plurality of value frameworks embedded in AI systems and the resulting diffusion of responsibility among developers, states, and institutions.[29] Ethical reflection thus becomes dialogical and culturally situated rather than reducible to universal principles. In public decision-making, digitalisation further blurs epistemic and legal boundaries of authority. Andrews warns that without traceability, explainability, and auditability, AI risks undermining institutional legitimacy.[30] Ferretti similarly argues that technical value alignment is insufficient without robust institutional frameworks capable of addressing structural inequalities exposed and amplified by AI actors.[31] AI often exposes and amplifies pre-existing institutional inequalities and failures, such as in copyright, labour markets, or privacy protection.[32]

The problem of alignment is fundamentally epistemological and ethical: do we know what machines should emulate, and who decides which values are correct?[33] This perspective illustrates that knowledge and responsibility in the AI era are collective and procedural. Responsibility for

24 Luciano Floridi, *Čtvrtá revoluce: jak infosféra mění tvář lidské reality*, 1st ed., trans. Čestmír Pelikán (Univerzita Karlova, Nakladatelství Karolinum, 2019).

25 Galaz et al., 'Artificial Intelligence, Systemic Risks, and Sustainability'.

26 Motoki et al., 'Assessing Political Bias and Value Misalignment in Generative Artificial Intelligence'; Nutil, *Média, lži a příliš rychlý mozek*.

27 Veale, 'Logics and Practices of Transparency and Opacity in Real-World Applications of Public Sector Machine Learning'.

28 Iason Gabriel, 'Artificial Intelligence, Values, and Alignment', *Minds and Machines* 30, no. 3 (2020): 411–37, https://doi.org/10.1007/s11023-020-09539-2.

29 Corrêa et al., *Worldwide AI Ethics*; Liu et al., *Understanding Artificial Intelligence*.

30 Andrews et al., 'A Trust Framework for Government Use of Artificial Intelligence and Automated Decision Making'.

31 Ferretti, 'Value Alignment Without Institutional Change Cannot Prevent the Societal Risks of Artificial Intelligence'.

32 Martin Ford, *Roboti Nastupují: Automatizace, Umělá Inteligence a Hrozba Budoucnosti Bez Práce* (Rybka Publishers, 2017).

33 Ji et al., 'Ai Alignment: A Comprehensive Survey'.

AI requires societal dialogue about values rather than purely technical standards. Responsibility for algorithmic decisions cannot be delegated to systems incapable of comprehending moral consequences. Transparency and explainability are therefore moral imperatives, not merely technical requirements.[34]

The Social and Educational Dimensions of Digital Inequality

With every new technology, the frame itself changes, not merely the image within it.[35] This insight also applies to information mediated by AI. The impact of information and perceptions is shaped not only by content but also by the surrounding context in which they are presented.[36] AI enters this process as a new intermediary of human knowledge, altering language, form, and meaning.
Empirical studies indicate that AI usage is unevenly distributed.[37] Age, education, and cultural capital remain key determinants, confirming that technology alone does not ensure equality and may reinforce disparities. For instance, the selection of 'appropriate words', a linguistic strategy employed by AI, can significantly influence text interpretation.[38] Postman[39] emphasises that each technological change produces a new 'media ecology', conferring power on some while diminishing it for others. From pedagogical and ethical perspectives, developing digital skills must extend beyond user competence to include critical and value-based formation, enabling an understanding of technology in relation to human dignity, freedom, and responsibility. This aligns with the mission of the humanities and theological disciplines to preserve and cultivate humanity within environments increasingly mediated by machine cognition. McLuhan[40] describes this as the 'formation of the masses', where individuals are interconnected through shared information and perceptions.
A lot of studies[41] highlight unequal access to AI benefits, particularly in agriculture and ecological systems, which vary according to age, education, and regional context. Digital literacy and cultural capital determine who can engage with AI. Without systemic measures, 'deepened inequality' and 'lock-in' effects may exacerbate structural disparities.[42] Motoki et al.[43] further stress that digital education must encompass ethical dimensions, cultivating the ability to recognise how algorithms reflect power relations, cultural biases, and social stereotypes. This development

34 Slattery et al., 'The AI Risk Repository'; Danielsson et al., 'Artificial Intelligence and Systemic Risk'.
35 McLuhan and Pondělíček, *Člověk, média a elektronická kultura*.
36 Jiří. Táborský, *V síti (dez)informací: proč věříme alternativním faktům*, 1st ed. (Grada Publishing, 2020).
37 Jurásek and Wawrosz, 'The use of chatbots in the Czech Republic with concentration on the Czech public administration'; Petr Šigut and Tomáš Foltýnek, 'Can We Detect ChatGPT-generated Texts in Czech and Slovak Languages?', in *Proceedings of the Seventeenth Workshop on Recent Advances in Slavonic Natural Language Processing (RASLAN 2023)*, ed. Aleš Horák et al. (Tribun EU, 2023), https://nlp.fi.muni.cz/raslan/raslan23.pdf; Javorčík and Malach, 'Conditions and Bases of Incorporation of Artificial Intelligence into Czech School Environment'.
38 Šigut and Foltýnek, 'Can We Detect ChatGPT-generated Texts in Czech and Slovak Languages?'; Táborský, *V síti (dez)informací*.
39 Neil Postman, *Technopoly: The Surrender of Culture to Technology*, 1st ed. (Vintage Books, 1993).
40 McLuhan and Pondělíček, *Člověk, média a elektronická kultura*.
41 Galaz et al., 'Artificial Intelligence, Systemic Risks, and Sustainability'; Xiaojun Yuan et al., 'Adoption of Artificial Intelligence Technologies by Often Marginalized Populations', in *Social Vulnerability to COVID-19*, ed. Xiaojun Yuan et al., Synthesis Lectures on Information Concepts, Retrieval, and Services (Springer International Publishing, 2023), https://doi.org/10.1007/978-3-031-06897-3_3; Partha Pratim Ray, 'ChatGPT: A Comprehensive Review on Background, Applications, Key Challenges, Bias, Ethics, Limitations and Future Scope', *Internet of Things and Cyber-Physical Systems* 3 (2023): 121–54, https://doi.org/10.1016/j.iotcps.2023.04.003; Marek Urban et al., 'ChatGPT Improves Creative Problem-Solving Performance in University Students: An Experimental Study', *Computers & Education* 215 (July 2024): 105031, https://doi.org/10.1016/j.compedu.2024.105031.
42 Geoff Mulgan, 'The Social Economy and the Fourth Industrial Revolution: The Risks of Marginalization and How to Avoid Them', in *Social Economy Science*, 1st ed., ed. Gorgi Krlev et al. (Oxford University PressOxford, 2023), https://doi.org/10.1093/oso/9780192868343.003.0005; Galaz et al., 'Artificial Intelligence, Systemic Risks, and Sustainability'; Zajko, 'Artificial Intelligence, Algorithms, and Social Inequality'.
43 Motoki et al., 'Assessing Political Bias and Value Misalignment in Generative Artificial Intelligence'.

necessitates the establishment of conducive environments for the adoption and utilisation of AI across various sectors of the economy and society, as well as among diverse demographic groups. Understanding the intricacies of AI integration is crucial for navigating the future of digital transformation, as it holds the potential to rede-fine economic and societal structures profoundly.[44] In the contemporary landscape, AI-based technologies are at the forefront of socio-economic disruption, catalysing a burgeoning interest in AI education among social and political spheres.[45] These large-scale international empirical studies, based on extensive quantitative surveys among adolescents and young adults, consistently confirm high levels of engagement with generative AI tools, particularly in education, everyday communication, and creative activities.[46]

Methodology

The study used a cross-sectional, ex post facto design[47] and was representative of the Czech population aged 15 and above in terms of age, education, and gender. Using proportional stratified random sampling, a final sample of 521 respondents was obtained.[48] The sample size was determined based on feasibility and the aim to achieve sufficient statistical power for detecting differences across age, gender, and educational subgroups. Data were collected between March and June 2024 via an online questionnaire, primarily through CAWI (Computer-Assisted Web Interviewing). A small proportion of respondents (<5%), mainly very elderly individuals who either did not have access to a computer or tablet or were unable to use one independently, completed the questionnaire via CAPI (Computer-Assisted Personal Interviewing) with assistance from a trained field researcher. Assistance was limited strictly to technical support, ensuring that responses reflected participants' own answers. The questionnaire was administered exclusively in Czech, and participation was limited to respondents with sufficient proficiency in the Czech language. Consequently, information on respondents' mother tongue was not collected. It was therefore assumed that all participants were able to understand and interact with AI tools in Czech, and that language-related factors did not affect the results. The data are available upon request, subject to access restrictions.

The variable of gender was measured on a binary scale: male (254; 48.7%) and female (267; 51.3). Due to the extremely low validity and frequency of self-reported identification with other genders in previous research (<1% of respondents), we were compelled to exclude the measurement of other gender identities from this study.

For the purposes of the study, age categories were created according to life stages: Adolescence and early adulthood (15–24 years; 88; 16.9%), middle adulthood (25–44 years; 202; 38.8%), late adulthood (45–59 years; 136; 26.1%), and old age (60+; 95; 18.2%). The sample shows a slight overrepresentation of younger age groups. This small deviation is unlikely to substantially affect the results, given the proportional and stratified analytical approach employed in the study.

The last of the measured independent demographic variables was the respondents' level of education, which was categorised into four groups for simplicity and comparability with prior Czech

44 Levi Checketts, 'Artificial Intelligence and the Marginalization of the Poor', *Journal of Moral Theology* 11, no. SI1 (2022), https://doi.org/10.55476/001c.34125; Šárovec, 'Political Actors in the Age of Generative Artificial Intelligence'; Turková et al., 'Adapting to the Future'.

45 Moravec et al., 'Everyday Artificial Intelligence Unveiled'.

46 Zormanova and Vavříková, 'Attitudes of Czech and Polish Teachers Towards the Use of Artificial Intelligence in Schools'; Lnenicka and Machova, 'A Mixed-Methods Analysis of Artificial Intelligence Adoption and Perceived Impacts in Czech Municipal Administration'.

47 Alan Bryman, *Social Research Methods*, 5th ed. (Oxford University Press, 2016).

48 For reasons of replicability, the full Czech version of the questionnaire is available at https://socialsurvey.eu/

studies:[49] individuals with elementary education (38; 7.3%), individuals with vocational/apprenticeship training[50] (133; 25.5%), individuals with high school education (207; 39.7%), and individuals with higher (tertiary) education (143; 27.5%). Compared to the educational distribution in the Czech population, the sample is moderately skewed towards higher (tertiary) education. However, this deviation is unlikely to substantially affect the results, given the proportional and stratified analytical approach employed in the study.

The survey focused on six specific categories of AI tools—text generation, translation, grammar checking, image generation, AI tools in automobiles, and other tools such as sound or video processing. These represent the most widely used and accessible applications among the general Czech population. These categories were selected based on prior research on AI adoption patterns, pilot testing, and relevance to both every day and professional use. Other forms of AI usage, such as AI integrated into mobile photo-editing applications or niche professional software, were excluded due to their lower prevalence in general use and to maintain the survey's clarity and manageability. This approach allowed the study to concentrate on tools where meaningful variation in engagement could be observed across age and education groups. The operationalisation of AI tool usage combined multiple response components—such as type of task and frequency of use—into single survey items. This approach was chosen to reduce survey length and respondent fatigue, while pilot testing ensured clarity and comprehensibility of each item. To further support validity, examples of specific AI tools were provided for each category. Although the questionnaire did not include an explicit 'I do not know if the IT tools I use contain AI' option, the clear presentation of examples was intended to minimise ambiguity. Future research could incorporate an explicit 'unsure' category to capture respondents' awareness more precisely.

For the purposes of this research, a set of hypotheses was established, assuming a dependence of AI use on the factors of gender, age, and education. Hypotheses were tested using Pearson's chi-squared test of independence for contingency tables, supplemented by the calculation of adjusted residuals (labelled as 'z' in the tables),[51] which enabled a more detailed analysis of the results in cases where the null hypothesis was rejected. The statistical significance of the z-scores was evaluated using a z-test, with critical values of ±1.96 indicating significance at the 0.05 level (marked *), ±2.52 indicating significance at the 0.01 level (marked **), and ±3.3 indicating significance at the 0.001 level (marked ***).

Results

Table 1 presents respondents' self-reported ownership and usage of accounts for artificial intelligence (AI)-based services. Out of a total of 521 respondents, only a minority use AI accounts regularly: approximately 5% use them daily, and 6% use them very frequently (once every day or two). A further 13% use AI accounts occasionally (weekly), and nearly 12% use them rarely (monthly). Overall, about one-third of respondents have at least one account and use it in some capacity. A portion of respondents (approximately 9%) do not own an account but still use other AI-based services, such as translators, maps, or chat tools. A small proportion (less than 1%)

49 This differs from the ISCED standard and should be considered when comparing internationally.

50 The category 'vocational/apprenticeship education' refers to lower secondary education with a focus on practical skills and professional training. This corresponds to education completed after elementary school but before higher secondary or tertiary education. Terminology may vary across English-speaking countries; in the Czech context, it denotes the completion of formal vocational programs, often combined with apprenticeships.

51 David Sheskin, *Handbook of Parametric and Nonparametric Statistical Procedures*, 5th ed. (Chapman & Hall/CRC, 2011); Razia Azen and Cindy M. Walker, *Categorical Data Analysis for the Behavioral and Social Sciences*, 2nd ed. (Routledge, 2021).

report that they would like an account but cannot afford one, while 2.5% would like an account but do not know how to set one up. A substantial segment of the sample, however, rejects AI service accounts: nearly 18% do not consider them useful and are unsure how they would use them, and 28% explicitly report that they do not want an account due to concerns about these technologies. Additionally, 5% of respondents admit that they do not know which online services are based on AI systems.

Table 1 Use of Artificial Intelligence

Do you have and use (paid or free) an account for any artificial intelligence (AI)-based services on your computer (e.g., text generators such as ChatGPT, image generators such as AI DALL-E, translators such as Deepl or Google Translator, grammar checkers such as Grammarly, etc.)?		
Response option	**n**	**%**
I have at least one such account and use it very intensively, working with it daily	**26**	**5%**
I have at least one such account and use it very frequently (once every day or two)	**33**	**6.3%**
I have at least one such account and use it occasionally (approximately once a week)	**67**	**12.9%**
I have at least one such account and use it rarely (approximately once a month)	**61**	**11.71%**
I do not have such an account, but I would like one; however, I cannot afford it for financial reasons	**5**	**1%**
I do not have such an account, but I use AI-based services (e.g., translators, smart maps, interactive chat tools on websites, etc.)	**49**	**9.4%**
I do not have such an account and do not know which online services are or are not based on these systems	**28**	**5.3%**
I do not have such an account, but I would like one and do not know how to create it	**13**	**2.5%**
I do not have such an account and do not want one; I do not know how I would use these technologies in my work or life	**93**	**17.9%**
I do not have such an account and do not want one because I am concerned about these technologies	**146**	**28%**
Total	**521**	**100%**

Table 2 shows that the most frequently used category is translation tools (e.g., Deepl, Google Translate), actively used by nearly one-third of respondents (32.4%). The second most common category is text generation tools (e.g., ChatGPT), used by over one-fifth of participants (22%). In contrast, the remaining categories are used only marginally. Grammar-checking tools are used by 5.6% of respondents, as are AI-based automotive tools. A similar proportion applies to other tools (5). The least widely used category is image generation, actively employed by only 4.2% of respondents.

Table 2 Use of Selected Artificial Intelligence Tools

Type of AI	Text generation (e.g., ChatGPT)	Translation (e.g., Deepl, Google Translate, Microsoft Translator, Translate.com, etc.)	Grammar checking (e.g., Grammarly, Ginger, Trinka, Hemingway, etc.)	Image generation (e.g., DALL-E, Midjourney, GetIMG, ArtSmart, etc.)	AI tools in automobiles (e.g., driving assistance, automated sensors, lane monitoring, adaptive cruise control, etc.)	Other tools (e.g., sound or video processing, etc.)
Use	n %	n %	n %	n %	n %	n %
No	406 77.9%	352 67.6%	492 94.4%	499 95.8%	492 94.4%	495 95%
Yes	115 22%	169 32.4%	29 5.6%	22 4.2%	29 5.6%	26 5%
Total	521					

Differences in the use of AI accounts and attitudes towards artificial intelligence by gender were not statistically significant ($p = 0.1906$); therefore, a table for this characteristic is not included in the presented results. As expected, AI is most frequently used by individuals in middle adulthood and adolescence. In contrast, active use of these technologies is markedly lower in late adulthood and particularly among the elderly. While older adults tend to fall into the group who do not have accounts and have limited knowledge of AI options, seniors often adopt a more negative stance towards these tools, citing concerns about the technology as the main reason for their reluctance.

Table 3 Differences in the Use of AI Accounts and Attitudes Towards AI by Age Group ($p < 0.001$)[52]

Response option	I have at least one such account and use it very frequently	I have at least one such account and use it occasionally	I do not have such an account and do not want one; I know almost nothing about them	I do not have such an account, but I use AI-based services (e.g., translators, smart maps, interactive chat tools on websites, etc.)	I do not have such an account, but I would like one	I do not have such an account and do not want one because I am concerned about these technologies
Age group	n z	n z	n z	n z	n z	n z
Adolescence and early adulthood	15 Z: 1.86	35 Z: 3.63***	16 Z: -1.23	10 Z: 0.69	2 Z: -0.67	10 Z: -3.82***
Middle adulthood	31 Z: 2.31*	57 Z: 1.54	37 Z: -2.11*	23 Z: 1.23	10 Z: 1.49	44 Z: -2.52*
Late adulthood	9 Z: -2.01*	26 Z: -1.72	47 Z: 3.64***	10 Z: -0.95	4 Z: -0.38	40 Z: 0.42
Old age	4 Z: -2.42*	10 Z: -3.52***	21 Z: -0.29	6 Z: -1.14	2 Z: -0.8	52 Z: 6.41***

The results presented in Table 4 indicate that the use of AI service accounts also varies according to respondents' educational attainment. Among those with vocational training, there is a below-average proportion of respondents reporting that they 'have at least one such account and use it very frequently' ($Z = -2.56^{*}$) or 'occasionally' ($Z = -2.96^{**}$). Conversely, this group shows a significantly above-average share of individuals who 'do not have any such account and do not wish to have one due to concerns about these technologies' ($Z = 4.19^{***}$). Among respondents with higher education, the opposite pattern is observed: there is a higher-than-average proportion reporting that they 'have at least one such account and use it very frequently' ($Z = 2.42^{*}$), alongside a below-average share of those who 'do not have any such account and do not wish to have one due to concerns about these technologies' ($Z = -3.29^{**}$).

52 For the contingency analyses reported in Table 3, the ten response categories presented in Table 1 were collapsed into six broader groups to meet the assumptions of the chi-square test, particularly with respect to low expected frequencies in some cells. Conceptually similar response options were merged to ensure adequate cell sizes and thus maintain the validity of the statistical inference.

Table 4 Differences in the Use of AI Accounts by Educational Attainment ($p < 0.001$)[53]

Response option	I have at least one such account and use it very frequently	I have at least one such account and use it occasionally	I do not have such an account and do not want one; I know almost nothing about them	I do not have such an account, but I use AI-based services (e.g., translators, smart maps, interactive chat tools on websites, etc.)	I do not have such an account, but I would like one	I do not have such an account and do not want one because I am concerned about these technologies
Education	n z	n z	n z	n z	n z	n z
primary education	2 Z: -1.22	10 Z: 0.26	6 Z: -1.13	3 Z: -0.33	3 Z: 1.56	14 Z: 1.26
apprenticeship	7 Z: -2.56*	20 Z: -2.96**	34 Z: 0.74	10 Z: -0.86	6 Z: 0.77	56 Z: 4.19***
high school	26 Z: 0.72	55 Z: 0.86	50 Z: 0.41	20 Z: 0.16	5 Z: -1.05	51 Z: -1.4
higher education	24 Z: 2.42*	43 Z: 1.79	31 Z: -0.51	16 Z: 0.86	4 Z: -0.51	25 Z: -3.29**

A more detailed analysis of individual AI tools revealed that their use varies according to age, particularly for text generation tools, translation tools, and AI applications in automobiles. Differences by educational attainment were observed for text generation, translation, and grammar-checking tools. In contrast, no statistically significant differences were found according to gender for any tool. The following tables (Tables 5–10) present detailed results for the categories where differences were significant.

Regarding age, text generation tools are used most frequently by individuals in middle adulthood and adolescence (Table 5, $p < 0.001$). A similar pattern is evident for AI translation tools, with the highest usage among younger and middle-aged users (Table 6, $p < 0.001$). Conversely, AI tools in automobiles are most commonly used in late adulthood, while adolescents and older adults exhibit the lowest levels of use (Table 7, $p > 0.028$).

53 For the contingency analyses reported in Table 4, the ten response categories presented in Table 1 were collapsed into six broader groups to meet the assumptions of the chi-square test, particularly with respect to low expected frequencies in some cells. Conceptually similar response options were merged to ensure adequate cell sizes and thus maintain the validity of the statistical inference.

Table 5. Use of Text Generation Tools by Age Group ($p < .001$)

	Age group					
Text generation (e.g., ChatGPT)		**Adolescence and early adulthood**	**Middle adulthood**	**Late adulthood**	**Old age**	
	Use	n z	n z	n z	n z	Σ
	No	46 z: -7.76***	155 z: -2.10*	128 z: 4.88***	99 z: 4.74***	428
	Yes	50 z: 7.76***	57 z: 2.10*	10 z: -4.88***	5 z: -4.74***	122
	Total	96	212	138	104	550

Table 6. Use of AI Translation Tools by Age Group ($p < 0.001$)

	Age group					
Translation (e.g., Deepl, Google Translate, Microsoft Translator, Translate.com, etc.)		**Adolescence and early adulthood**	**Middle adulthood**	**Late adulthood**	**Old age**	
	Use	n z	n z	n z	n z	Σ
	No	52 z: -3.15**	123 z: -3.90***	108 z: 3.03**	90 z: 4.54***	373
	Yes	44 z: 3.15**	89 z: 3.90***	30 z: -3.03**	14 z: -4.54***	177
	Total	96	212	138	104	550

Table 7. Use of AI Tools in Automobiles by Age Group ($p > 0.028$)

	Age group					
AI tools in automobiles (e.g., driving assistance, automated sensors, lane monitoring, adaptive cruise control, etc.)		**Adolescence and early adulthood**	**Middle adulthood**	**Late adulthood**	**Old age**	
	Use	n z	n z	n z	n z	Σ
	No	94 z: 1.54	200 z: -0.32	125 z: -2.52*	102 z: 1.70	521
	Yes	2 z: -1.54	12 z: 0.32	13 z: 2.52*	2 z: -1.70	29
	Total	96	212	138	104	550

Differences according to educational attainment are particularly evident for text generation, translation, and grammar-checking tools. Respondents with vocational training use these tools less fre-

quently than other groups, whereas those with higher (tertiary) education employ them most extensively (Tables 8–10; $p < 0.001$ for text generation and translation, $p > 0.035$ for grammar-checking).

Table 8. Use of Text Generation Tools by Educational Attainment ($p < 0.001$)

	Education					
Text generation (e.g., ChatGPT)		**primary education**	**apprenticeship**	**high school**	**higher education**	
	Use	n z	n z	n z	n z	Σ
	No	34 z: 0.51	132 z: 4.85***	161 z: -2.14*	101 z: -2.76**	428
	Yes	8 z: -0.51	11 z: -4.85***	59 z: 2.14*	44 z: 2.76**	122
	Total	42	143	220	145	550

Table 9. Use of AI Translation Tools by Educational Attainment ($p < 0.001$)

	Education					
		primary education	**apprenticeship**	**high school**	**higher education**	**Σ**
Translation (e.g., Deepl, Google Translate, Microsoft Translator, Translate.com, etc.)	Use	n z	n z	n z	n z	Σ
	No	34 z: 1.90	114 z: 3.54***	149 z: -0.04	76 z: -4.63***	373
	Yes	8 z: -1.90	29 z: -3.54***	71 z: 0.04	69 z: 4.63***	177
	Total	42	143	220	145	550

Table 10. Use of Grammar-Checking Tools by Educational Attainment ($p > 0.035$)

	Education					
Grammar checking (e.g., Grammarly, Ginger, Trinka, Hemingway, etc.)		**primary education**	**apprenticeship**	**high school**	**higher education**	
	Use	n z	n z	n z	n z	Σ
	No	39 z: -0.56	141 z: 2.41*	209 z: 0.23	132 z: -2.32*	521
	Yes	3 z: 0.56	2 z: -2.41*	11 z: -0.23	13 z: 2.32*	29
	Total	42	143	220	145	550

It should be noted that both age and educational attainment appear to influence AI usage, and these factors are likely interrelated. AI is used most frequently by adolescents and individuals

in middle adulthood. Older adults show lower levels of engagement and more concerns about these technologies. Likewise, respondents with higher education report more frequent use of AI accounts and tools. Respondents with vocational training tend to use them less or avoid them due to concerns. Because age and education are correlated, it is not possible to determine from the descriptive analyses presented whether age or education is the primary factor driving AI use in certain groups. Therefore, the observed patterns may reflect overlapping influences of both variables, and more advanced analyses would be required to separate their effects. The overlapping influences suggest that younger respondents may also be more educated or exposed to AI in their studies, while older adults with lower formal education may have less experience or confidence with these tools. This highlights the need for further sociological analyses to disentangle age, education, and professional experience effects.

Discussion

From a cultural and anthropological perspective, AI functions not only as a technical tool but also as a moral and epistemic actor, actively shaping how individuals understand truth, knowledge, and agency. As McLuhan[54] observed, every new medium reshapes human perception and experience. AI extends this effect by participating directly in interpretation, evaluation, and decision-making across education, science and research, politics, and entertainment. Gabriel[55] emphasises that AI is not a neutral tool but a cultural participant co-creating systems of meaning and moral interpretation. By mediating access to information and influencing human behaviour, AI raises new ethical and epistemological questions about responsibility, trust, and human agency, a challenge Corrêa et al.[56] describe as the emerging 'AI ethics boom', a collective effort to reintegrate technology into human moral and institutional frameworks.

In line with these conceptual insights, and with particular reference to McLuhan's theoretical assumptions, our study confirms that AI is driving a profound cultural transformation, shaped by age and education.

Intensive use of AI accounts remains relatively marginal. As shown in Table 1, only 5% of respondents use AI accounts daily, and approximately one-third use them at least occasionally. Translation and text generation tools are the most frequently used (Table 2), indicating that limited adoption is not purely a matter of access but is shaped by perceptions of usefulness and required skills. Concerns, uncertainty, and limited awareness represent key barriers to broader adoption. The unequal engagement with AI reflects not only disparities in access or skills but also variations in how different social groups internalise and interpret technological change.[57] Age appears to be inversely correlated with AI engagement: older adults and seniors use AI tools less frequently and are more likely to report apprehensions or uncertainties. Conversely, younger and middle-aged adults show higher engagement, particularly with tools requiring advanced digital or language skills, such as text generation and translation platforms. Tables 3 and 5–7 confirm these patterns. AI use in automobiles, however, is more common among older adults.

54 McLuhan and Pondělíček, *Člověk, média a elektronická kultura.*

55 Gabriel, 'Artificial Intelligence, Values, and Alignment', 2020.

56 Corrêa et al., *Worldwide AI Ethics.*

57 Jiri Pospisil and Ivana Olecka, 'Smartphones, Internet Banking, and Online Education: How Did the Covid-19 Pandemic Influence the Skills for the Digital Age', *Proceedings of 9th SWS International Scientific Conference on Social Sciences - ISCSS 2022* 9 (December 2022): 953–60, https://doi.org/10.35603/sws.iscss.2022/s13.113; Ivana Olecká and Jiří Pospíšil, 'ICT Use by Czech Adolescents and Young Adults during the Period of the Covid-19 Pandemic', *EDULEARN22 Proceedings* (Palma, Spain), 14th international conference on education and new learning technologies, 2022, 119–23, https://doi.org/10.21125/edulearn.2022.0039.

These age-related differences may reflect variations in professional demands, prior experience with digital technologies, or cognitive comfort with AI-mediated tasks. Observations align with prior researches emphasising the susceptibility of digitally less competent users to targeted disinformation campaigns.[58]

Another significant factor influencing the use of AI has proven to be the level of education attained, which not only affects the likelihood of adoption but also determines the intensity of engagement in the use of AI tools that require more complex skills. Tables 4 and 8–10 indicate that higher-educated respondents use text generation, translation, and grammar-checking tools more intensively, while respondents with vocational training use them less frequently or avoid them due to concerns. Differences may be linked to prior exposure to AI-related tasks, digital literacy, and professional or academic contexts, which enhance comfort and perceived utility of AI tools.

These findings highlight the need for policies and interventions, addressing structural inequalities, as differential AI adoption by age and education suggests that unequal access to digital competencies may reinforce existing social disparities and limit informed participation in AI-mediated environments. Andrews[59] argues that education should cultivate individuals' capacity to understand, contest, and meaningfully contribute to algorithmic decision-making, thereby fostering trust and civic participation. Extending this argument, Ji et al.[60] note that discussions on existential and systemic AI risks often overlook who is actually empowered to shape the rules, highlighting that educational and cultural resources influence who can question the assumptions and values embedded in AI technologies.

Transparency and embedded values are therefore not merely technical issues but fundamentally social and educational concerns. Veale emphasises that comprehension and interpretative skills are crucial for navigating AI models, while Gabriel[61] warns that leaving value determinations solely to technocrats or private corporations generates power and ethical asymmetries. He advocates for 'fair alignment principles' grounded in pluralist ethics, human rights, and democratic participation, highlighting that technological literacy must be accompanied by ethical reflection to prevent cultural dominance and deepening digital inequality.

Systemic disparities are further reflected in the uneven production and adoption of AI ethical standards. Ji et al.[62] note that these debates often fail to discuss who shapes the rules. Whittlestone et al.[63] observe that 'the costs and benefits of ADA-based technologies[64] may be unequally distributed across groups demarcated by gender, class, or ethnicity'. They advocate 'digital citizenship education', linking technical skills with ethical and social understanding to view AI as a societal

58 Pirdaus and Surya, 'Artificial Intelligence in Politics'; Momina Masood et al., 'Deepfakes Generation and Detection: State-of-the-Art, Open Challenges, Countermeasures, and Way Forward', *Applied Intelligence* 53, no. 4 (2023): 3974–4026, https://doi.org/10.1007/s10489-022-03766-z; Floridi, *Čtvrtá revoluce*; Joyce Vissenberg et al., 'Digital Skills and Digital Knowledge as Buffers Against Online Mis/Disinformation? Findings from a Survey Study Among Young People in Europe', *Social Media + Society* 9, no. 4 (2023): 20563051231207859, https://doi.org/10.1177/20563051231207859; Kimberley Kruijver et al., 'The Disinformation Lifecycle: An Integrated Understanding of Its Creation, Spread and Effects', *Discover Global Society* 3, no. 1 (2025): 58, https://doi.org/10.1007/s44282-025-00194-5.

59 Andrews et al., 'A Trust Framework for Government Use of Artificial Intelligence and Automated Decision Making'.

60 Ji et al., 'Ai Alignment: A Comprehensive Survey'.

61 Gabriel, 'Artificial Intelligence, Values, and Alignment', 2020.

62 Ji et al., 'Ai Alignment: A Comprehensive Survey'.

63 Jess Whittlestone et al., 'Ethical and Societal Implications of Algorithms, Data, and Artificial Intelligence: A Roadmap for Research', *London: Nuffield Foundation*, 2019, 18.

64 ADA-based technologies refer to technologies built on algorithms, data, and artificial intelligence (Algorithms, Data, and AI), which are often intertwined and whose impacts may be unevenly distributed across different social groups.

phenomenon rather than a mere tool. Similarly, Corrêa et al.[65] document significant geographic, social, and gender-based imbalances, noting that 66% of authors of ethical AI frameworks are male. Women and minorities remain underrepresented. Education, cultural capital, and participatory skills are key to fair, responsible, and ethically informed engagement with AI. AI ethics cannot be separated from education and the formation of values that are necessary to ensure that technology serves the broader society and does not reinforce the interests of elites. Andrews[66] argues that public administration must educate both employees and citizens to understand digital systems, framed not only technically but also ethically and civically, restoring participation, trust, and justice through 'participatory governance' and an 'open culture' inclusive of diverse and minority perspectives. In the same way, Liu et al.[67] link the concept of 'human-centred AI' to education, participation, and inclusion, identifying education as a key predictor of AI utilisation. Analogously, Ferretti[68] argues that problems such as misinformation, algorithmic discrimination, and unequal access to employment are rooted not only in technology itself but in institutional failings, including insufficient educational opportunities and weakened systems of social protection. AI therefore reveals rather than generates inequalities, exposing deeper cultural and educational deficiencies that require systemic solutions.[69]

Against this backdrop, the Centre for AI and Digital Policy[70] underscores that digital literacy and education are essential for democratic AI governance. Educational and ethical policy are pivotal for responsible technology use. Digital competence influences not only technology adoption but also citizen trust in digital systems, including autonomous vehicles and transport networks[71]. This conclusion is supported by studies emphasising value and media literacy as prerequisites for ethical AI utilisation.[72]

Psychological and cultural consequences of human–AI interaction shape both individual autonomy and collective behaviour. Slattery et al.[73] highlight risks of diminished autonomy, overreliance on machine outputs, and weakened interpersonal relationships, noting that excessive dependence on algorithms can undermine independent critical reflection and reshape how individuals learn, create, and construct identity in digital environments.[74]

Overall, the human-AI relationship is multilayered, shaped by technological, cultural, and socio-demographic variables such as age, education, and gender, which we examined in our study. Research repeatedly demonstrates that these factors strongly influence digital competence, technology adoption, and engagement with AI-mediated environments,[75] as well as the ways innovations are interpreted and applied.

Socioeconomic status was not in this study explicitly measured; it focused primarily on age,

65 Corrêa et al., *Worldwide AI Ethics*.
66 Andrews et al., 'A Trust Framework for Government Use of Artificial Intelligence and Automated Decision Making'.
67 Liu et al., *Understanding Artificial Intelligence*.
68 Ferretti, 'Value Alignment Without Institutional Change Cannot Prevent the Societal Risks of Artificial Intelligence'.
69 Danielsson et al., 'Artificial Intelligence and Systemic Risk'.
70 Center for AI and Digital Policy, 'Artificial Intelligence and Democratic Values 2025: AI Policy Leadership for the 21st Century', CAIDP, 2025, https://www.caidp.org/aidv2025.
71 Patrick Zandl, *Mýty a naděje digitálního světa: vše, co potřebujete vědět o kryptoměnách, umělé inteligenci a dalších převratných technologiích*, 1st ed. (Jan Melvil Publishing, 2022).
72 Foltýnek and Newton, 'What Does YouTube Advise Students About Bypassing AI-Text Detection Tools?'
73 Slattery et al., 'The AI Risk Repository'.
74 Táborský, *V síti (dez)informací*.
75 Galaz et al., 'Artificial Intelligence, Systemic Risks, and Sustainability'; Andrews et al., 'A Trust Framework for Government Use of Artificial Intelligence and Automated Decision Making'; Ferretti, 'Value Alignment Without Institutional Change Cannot Prevent the Societal Risks of Artificial Intelligence'.

gender, and educational differences. However, literature indicates that access to and use of AI is also related to socio-economic factors. Elisa Bassignana et al.[76] empirically demonstrate that socioeconomic status significantly influences how people use generative AI tools. Differences are observed, for example, in interaction styles and the ways in which LLMs are utilised across different SES groups. Similarly, when Fang, Xu & Ng[77] analyse the digital divide, they confirm that sociodemographic and socioeconomic factors (including family SES) influence access to digital technologies.

These social and educational disparities are not merely of academic concern; they create tangible vulnerabilities in societal security and resilience. The spread of generative and data-driven technologies has also intensified the so-called post-truth condition, in which the distinction between fact and fiction becomes blurred. Deepfake technologies,[78] algorithmic curation, and automated content creation illustrate the dual nature of AI: while enabling creativity and efficiency, they simultaneously open the door to manipulation, misinformation, and social polarisation. These dynamics highlight the transformative power of AI not only at the technological but also at the cultural and moral levels.[79] The results of this study highlight pressing security challenges associated with the uneven adoption of AI technologies. Differential engagement and varying digital competencies create systemic vulnerabilities that can be exploited in information warfare, political manipulation, and hybrid threat scenarios. Populations with limited AI literacy—particularly older adults or those with lower formal education—are more susceptible to disinformation campaigns, including deepfake videos, AI-generated text, and automated translation tools that can be weaponised to influence public opinion or destabilise democratic processes.[80] Digitally less competent users are more vulnerable to targeted disinformation.[81] At the same time, overreliance on algorithmic systems among younger and digitally advanced users can produce new dependencies, leading to what Slattery et al.[82] describe as the 'delegation of judgment'. Both extremes challenge the notion of human autonomy central to the humanities and theology.

These dynamics also have broader strategic implications. High engagement among younger, digitally proficient groups may accelerate the dissemination of AI-mediated content, which can be co-opted by malign actors for psychological operations or targeted influence campaigns. Conversely, lower adoption among other demographics limits their resilience, potentially creating information 'blind spots' that adversaries could exploit. In this sense, AI adoption is not merely a matter of technological uptake but a critical factor in societal security and national resilience. While regulatory frameworks such as the EU's AI Act and transparency initiatives are essential, they are insufficient on their own, as our findings indicate that AI engagement varies substantially

76 Elisa Bassignana et al., 'The AI Gap: How Socioeconomic Status Affects Language Technology Interactions', version 2, preprint, arXiv, 2025, https://doi.org/10.48550/ARXIV.2505.12158.

77 Xiaoxuan Fang et al., 'Exploring the Influence of Sociodemographic and Socioeconomic Factors on the Digital Divide in Higher Education', *Education Sciences* 15, no. 12 (2025): 1690, https://doi.org/10.3390/educsci15121690.

78 Deepfake technology, often based on generative adversarial networks (GANs), exemplifies the dual-edged nature of AI. GANs employ two neural networks—a generator and a discriminator—to produce content that is increasingly difficult to distinguish from genuine audiovisual material. Deepfakes can simulate political leaders or public figures, creating videos that are visually and aurally almost indistinguishable from reality. The accessibility of such technologies means that not only professional teams but also individuals with minimal technical expertise can generate and disseminate manipulated content, particularly via social media platforms designed to amplify emotionally charged material. Consequently, misleading content can achieve viral reach within hours, influencing public opinion faster than traditional media or political actors can respond Emil Mleziva, *Diktatura informací: jak s námi informace manipulují*, 1st ed. (Čeněk, 2004).

79 Masood et al., 'Deepfakes Generation and Detection'.

80 Mleziva, *Diktatura informací*; Masood et al., 'Deepfakes Generation and Detection'; Pirdaus and Surya, 'Artificial Intelligence in Politics'.

81 Galaz et al., 'Artificial Intelligence, Systemic Risks, and Sustainability'.

82 Slattery et al., 'The AI Risk Repository'.

across demographic groups. Educational and cultural strategies are therefore necessary to strengthen ethical reasoning, critical reflection, and civic dialogue, particularly among populations with lower digital competence. Institutional responsibility cannot be reduced to technical oversight—it must include fostering the human capacity for discernment in a world increasingly co-shaped by machines.

While the technology itself is not morally neutral—the values and intentions of its creators shape its design and potential applications—the ultimate responsibility for its deployment lies with the owners and users of the technology. Regulatory frameworks are emerging; for example, the European Union has introduced measures aimed at detecting and preventing deepfake videos and promoting transparency in social media algorithms. Digital literacy and public education also play an essential role in enabling citizens to critically engage with AI-influenced political environments.[83]

Addressing these risks requires an integrated strategy that goes beyond purely technical oversight, since the observed demographic differences in AI use suggest that vulnerabilities arise not only from system design but also from uneven digital literacy and interpretative capacity. Regulatory initiatives—such as EU measures on transparency and deepfake detection—must be complemented by safeguards embedded directly into system design and by accountability mechanisms that protect the public sphere from manipulation and exploitation. The demographic disparities observed in this study illustrate not only uneven access to technological benefits but a deeper transformation of agency and participation in digitally mediated environments. A human-centred approach is therefore essential: one that integrates ethical reflection, cultural diversity, and critical literacy. In this respect, the humanities and social sciences play an indispensable role in understanding AI as a transformation of meaning and community—not merely as a technical evolution.

Effective management of the risks arising from the use of AI requires interdisciplinary collaboration across security studies, policy-making, ethics, and technology governance. By aligning technological development with security-conscious frameworks, societies can harness the benefits of AI while reducing the potential for destabilising applications in political, social, and strategic contexts.

While our results show differences in AI use across age and educational groups, it is not possible to clearly separate the influence of age and education alone using the descriptive statistics used here. As already noted, the observed patterns may reflect differences in prior educational experience, professional contexts, or other factors. Further empirical sociological research could provide deeper insight into the underlying reasons for these differences and enhance the interpretation of these findings. Our descriptive findings provide preliminary evidence of the role of age and education, but more nuanced analyses, potentially including multivariate models, are needed to clarify causal pathways and interactions between demographic factors, tool type, and adoption intensity.

AI represents both a transformative opportunity and a profound challenge. Its applications in political communication, media production, and social influence highlight the urgent need for interdisciplinary research and ethical frameworks that balance innovation with the protection of public trust and democratic integrity. Future work should explore mechanisms for mitigating risks while maximising the societal benefits of AI technologies. Moreover, while global research increasingly explores AI's societal implications, little is known about demographic and educational differences in its adoption in the Czech Republic.

83 Pirdaus and Surya, 'Artificial Intelligence in Politics'.

Conclusions

This study provides an empirical insight into AI adoption patterns within the Czech Republic, demonstrating that engagement with AI tools remains concentrated primarily among younger and higher-educated users. Older adults and individuals with lower educational attainment adopt such tools more cautiously. These sociodemographic disparities are directly supported by the data and clearly shape patterns of access and usage.

The discussion of associated risks, ethical challenges, and potential vulnerabilities should be understood as a conceptual interpretation rather than a direct empirical finding. Drawing on literature in the humanities and social sciences, it can be assumed that groups with limited AI literacy could be more susceptible to misinformation, manipulation, or unequal access to emerging technological benefits. These outcomes were not directly measured in this study.

From a policy perspective, three domains emerge as particularly relevant based on both empirical patterns and theoretical considerations:

1. Educational measures – strengthening digital and ethical literacy across age and professional groups;
2. Institutional safeguards – ensuring transparency, explainability, and fairness in public and commercial AI deployments;
3. Cultural dialogue – supporting value-oriented debates about human dignity, autonomy, and justice in digital societies.

Promoting equitable access to AI is not only a technical challenge but also a civic and ethical responsibility. By integrating technological innovation with critical reflection and inclusive education, societies can mitigate risks while safeguarding human autonomy and diversity.

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