

Volume 1, Issue 1

Research Article

Date of Submission: 07 Nov, 2025

Date of Acceptance: 05 Dec, 2025

Date of Publication: 10 Dec, 2025

## Generative AI: Impact on Society's Growth

Diya Nirankari\*

Independent Researcher, Rajeev Gandhi Nagar, Farrukhabad, India

\*Corresponding Author: Diya Nirankari, Independent Researcher, Rajeev Gandhi Nagar, Farrukhabad, India.

**Citation:** Nirankari, D. (2025). Generative AI: Impact on Society's Growth, *J Adv Robot Auton Syst Hum Mach Interact*, 1(1), 01-06.

### Abstract

Generative Artificial Intelligence (AI) represents one of the most transformative technological innovations of the 21st century. Unlike traditional algorithms, generative AI systems are not limited to classification or prediction tasks—they create new content in the form of text, images, software code, music, and even scientific hypotheses. This paper critically examines the societal implications of generative AI through an interdisciplinary Open Forum approach, focusing on its influence on economic growth, education, healthcare, cultural production, and governance. By integrating ethical theory frameworks—including utilitarianism, deontology, Rawlsian justice, and virtue ethics—this study evaluates the moral legitimacy of AI applications. Case studies are drawn from education (AI tutors in South Korea and accessibility gaps in Africa), healthcare (protein folding, AI diagnostics), governance (deepfakes and elections), and cultural industries (AI-driven music and digital idols in K-pop). The discussion engages with existing academic debates surrounding AI ethics and governance, particularly issues of transparency, fairness, intellectual property, misinformation, and global inequality. Visual data analysis complements qualitative research, using charts on GDP contributions, adoption rates, investment growth, education impacts, and ethical concern severity. The paper argues that while generative AI presents extraordinary opportunities for inclusive growth and innovation, it also raises pressing challenges that require proactive governance, ethical safeguards, and global cooperation. The conclusion emphasizes that the trajectory of generative AI must be shaped by societal values, equitable access, and accountable institutions to ensure its benefits are widely distributed.

**Keywords:** generative AI, Societal Growth, Ethics, Governance, Education, Healthcare, Economy, Cultural Industries

### Introduction

Artificial Intelligence (AI) has advanced from its origins in rule-based expert systems in the 1950s to today's deep learning architectures capable of generating creative, human-like outputs. The emergence of Generative AI—powered by models such as Generative Adversarial Networks (GANs) and Large Language Models (LLMs)—marks a paradigmatic shift. These systems do not simply analyze; they create. GPT-4, Stable Diffusion, and AlphaFold exemplify technologies that generate coherent language, realistic images, and scientific discoveries. The diffusion of generative AI coincides with global trends of digitalization, interconnected economies, and the automation of cognitive labor. Businesses now deploy generative AI for product design, automated marketing, customer service, and financial forecasting. In healthcare, algorithms accelerate drug discovery, aid radiology, and personalize treatments. In education, AI tutors provide adaptive learning across linguistic and geographic barriers. Cultural industries such as music, film, and gaming are being reshaped as human creativity merges with machine outputs. Yet, these opportunities are tempered by societal challenges. The displacement of workers, erosion of trust through misinformation, and ambiguity over intellectual property rights provoke intense debate. Scholars like Shoshana Zuboff (2019) warn of "surveillance capitalism," where AI-driven data extraction undermines autonomy. Others, like Brynjolfsson and McAfee (2017), argue that automation complements rather than replaces human labor when guided by responsible policies. Central questions emerge: Can society harness generative AI responsibly? Will its benefits be equitably distributed or concentrated in wealthy nations and corporations? Does generative AI strengthen or weaken democratic institutions? This paper explores these questions through a multi-dimensional analysis, integrating ethical theory, case studies, and visual data to examine AI's impact on society's growth.

## Literature Review

The literature on generative AI spans economics, sociology, computer science, and ethics. McKinsey (2023) estimated that generative AI could contribute \$2.6–4.4 trillion annually to the global economy, primarily by automating knowledge work. OECD (2022) emphasized that AI can democratize education, healthcare, and governance if access is equitable. In contrast, Bender et al. (2021) warned that large language models risk amplifying bias and misinformation. Floridi and Cowls (2022) proposed a five-principle ethical framework—beneficence, non-maleficence, autonomy, justice, and explicability—as necessary safeguards for AI.

Case-specific studies highlight sectoral impacts. DeepMind’s AlphaFold transformed protein science, saving years of research. Khan Academy’s GPT-4 powered tutors showed promise in democratizing learning. However, political misuse of deepfakes demonstrates risks to democratic integrity. Governance literature debates regulatory strategies. The EU’s Artificial Intelligence Act (2023) categorizes AI by risk, reflecting a precautionary approach. Meanwhile, U.S. frameworks emphasize innovation and self-regulation. Scholars argue that fragmented governance risks “AI nationalism,” where competing regimes deepen global inequality (Nemitz, 2018). Cultural studies highlight AI’s role in art and entertainment. OpenAI’s DALL·E raised questions about authorship and authenticity, while K-pop companies launched AI-generated virtual idols. Critics argue this commodifies identity and creativity, detaching cultural products from human lived experience. This body of work reveals both optimism and skepticism, forming the basis for the paper’s integrated analysis.

## Methodology

This study adopts a qualitative, interdisciplinary methodology combining Thematic Review – Synthesizing literature from economics, ethics, sociology, and policy. Comparative Analysis – Balancing optimistic claims of productivity with critical perspectives on bias and inequality. Visual Data Integration – Employing illustrative charts and projections to contextualize trends:

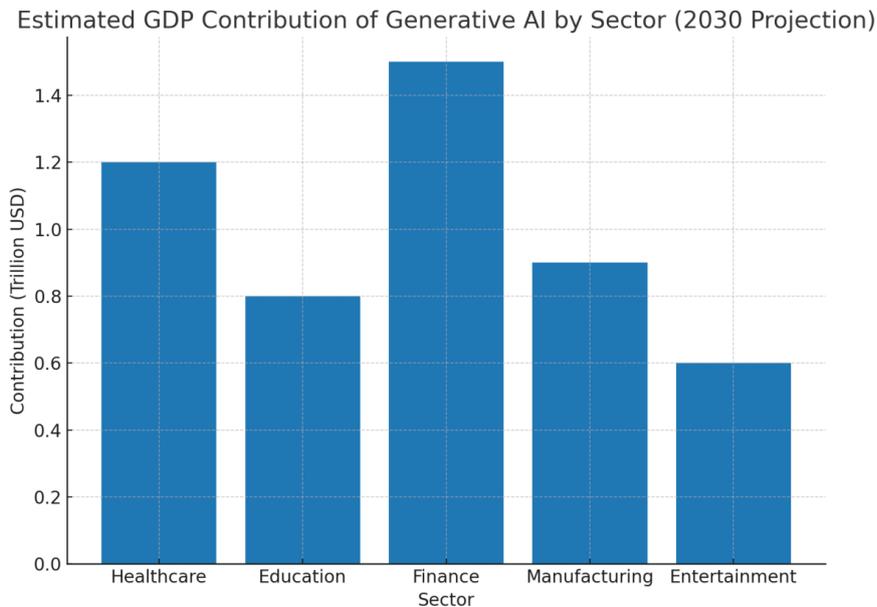


Figure 1: Estimated GDP Contribution by Sector

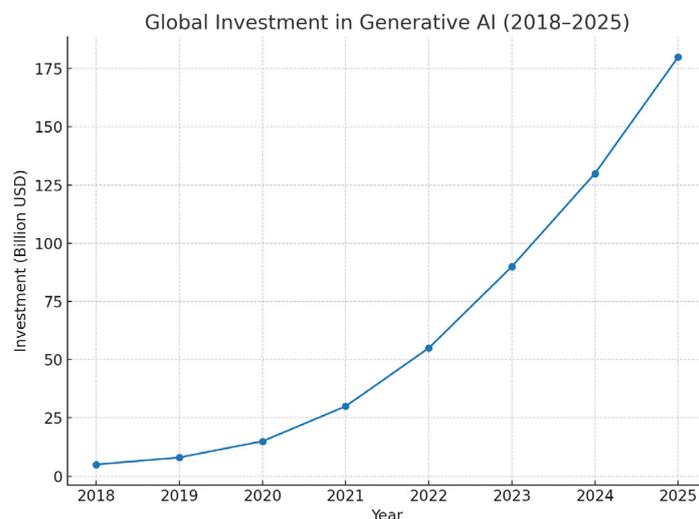
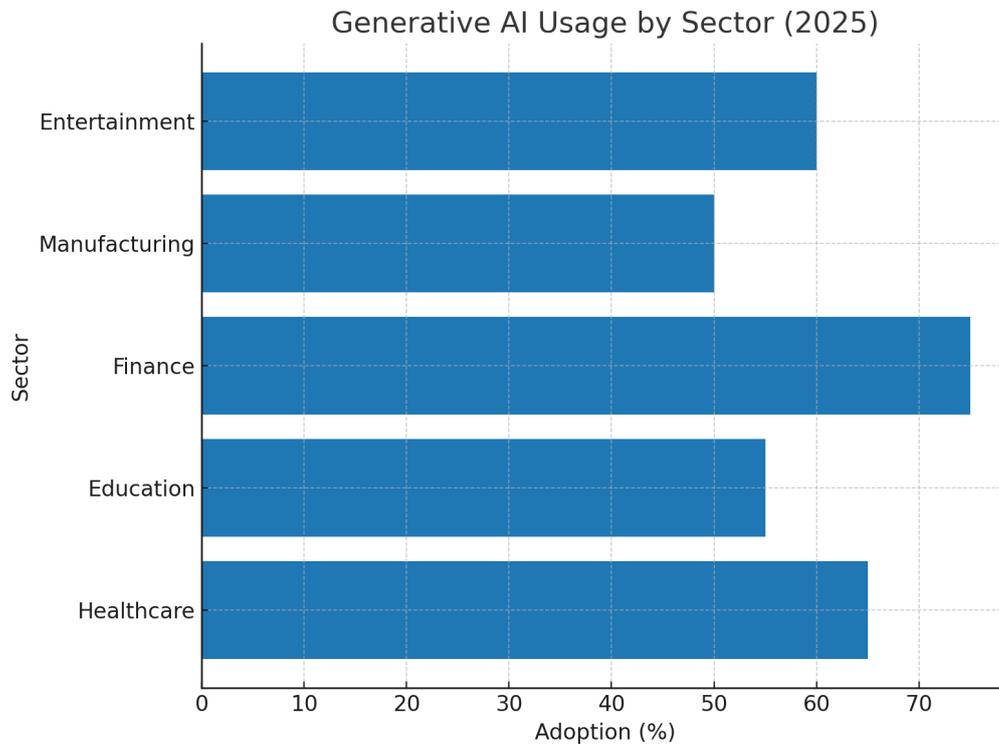
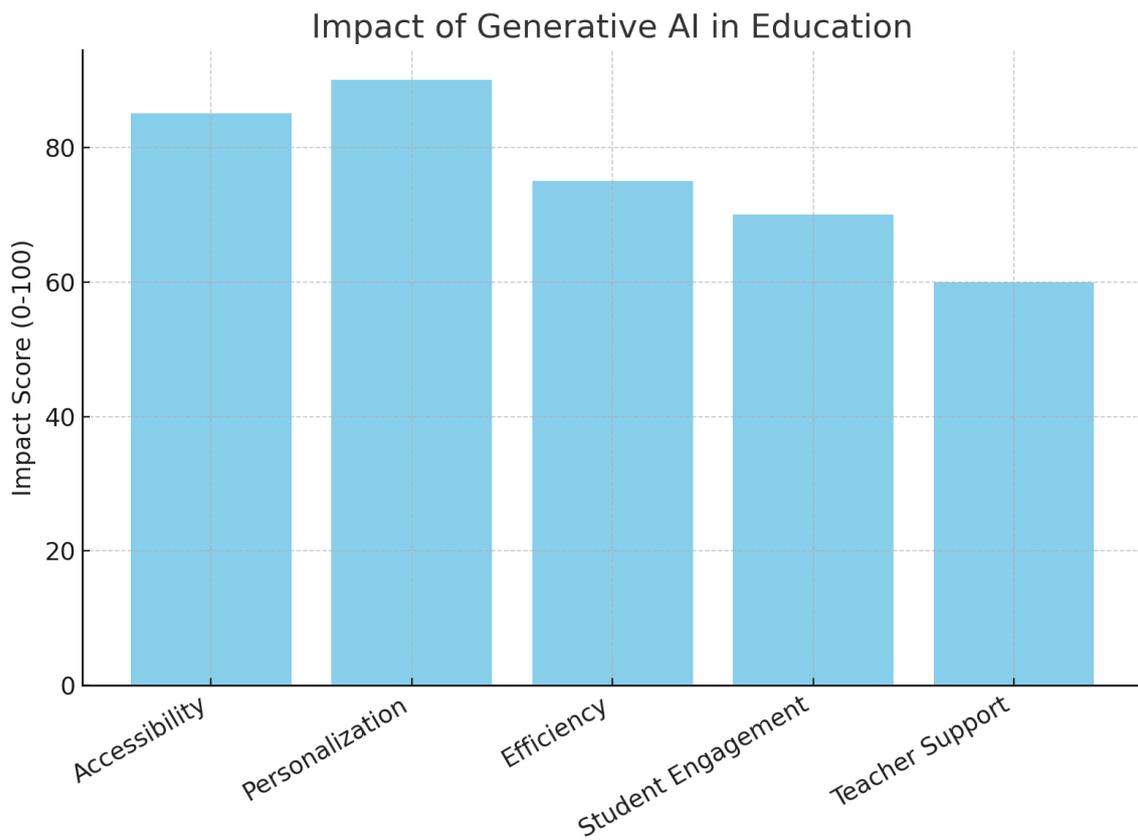


Figure 2: Investment Growth (2018–2025)



**Figure 3: AI Usage by Sector (2025)**



**Figure 4: AI in Education Impact Scores**

Generative AI Adoption Rates by Region (2025)

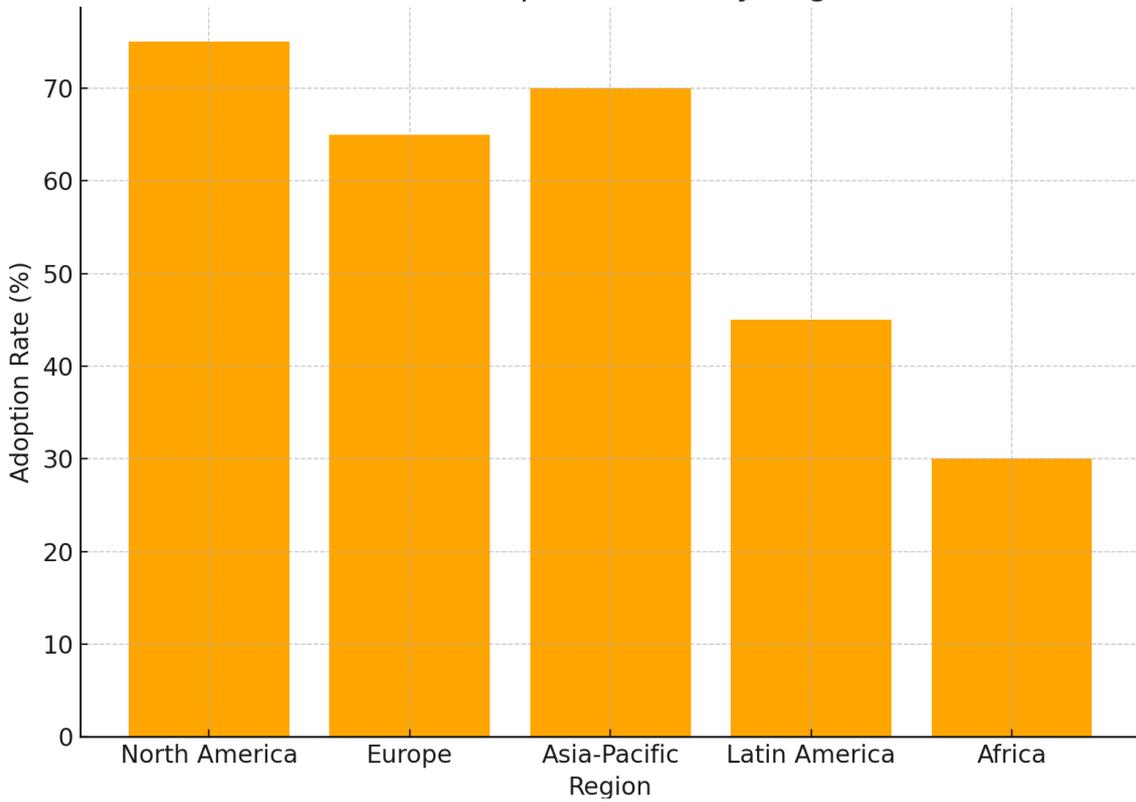


Figure 5: Adoption Rates by Region

Ethical Concern Severity Index

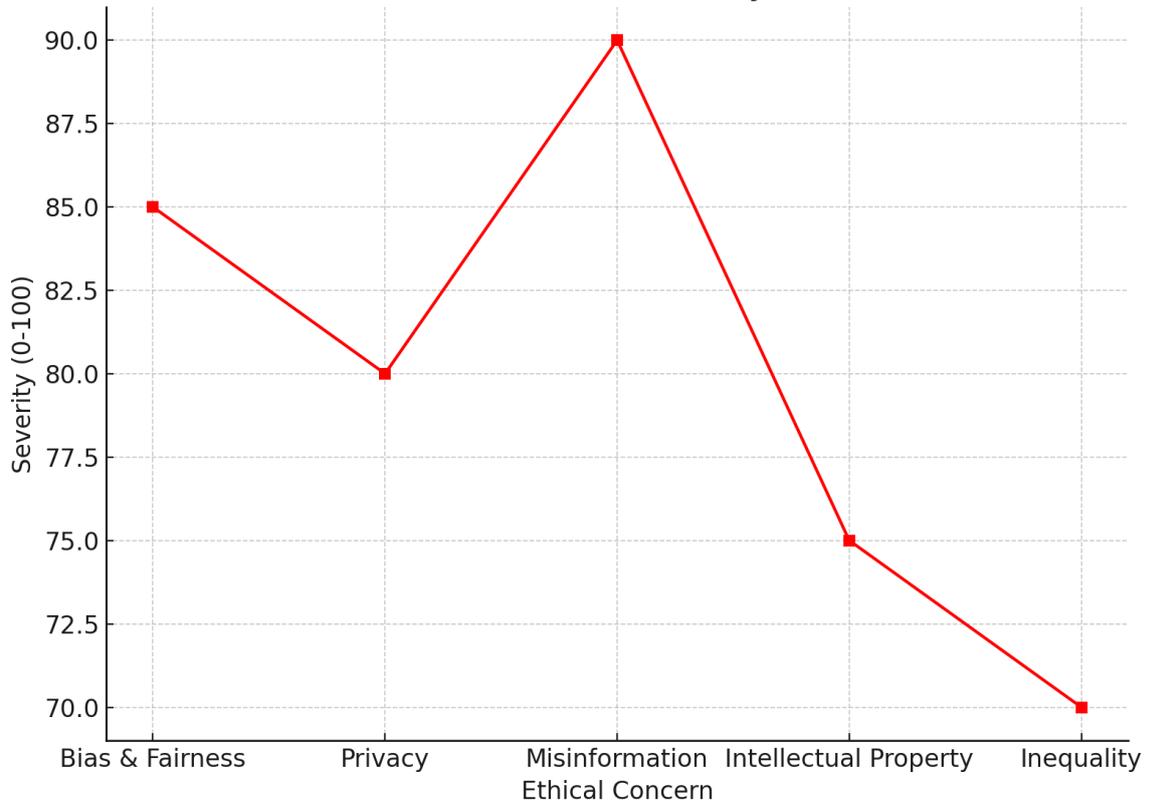


Figure 6: Ethical Concern Severity Index

The methodology acknowledges limitations: reliance on secondary data and projections introduces uncertainty. However, by triangulating scholarship, case studies, and visual evidence, the study offers a robust foundation for evaluating generative AI's societal role.

## **Discussion & Analysis**

### **Economic Impact**

Generative AI enhances productivity by automating design, content creation, and customer engagement. It allows SMEs to compete with large corporations, potentially democratizing markets.

However, AI-driven automation risks displacing jobs. The World Economic Forum (2023) projected that 85 million jobs may be displaced by 2025, while 97 million new roles could emerge. The challenge lies in reskilling workers, particularly in developing economies where digital infrastructure is limited. From a Rawlsian justice perspective, AI-driven growth risks exacerbating inequality unless institutions redistribute benefits fairly.

### **Education & Knowledge Sharing**

Generative AI enables personalized tutoring, translation of curricula, and automated grading. South Korea has piloted AI tutors to complement its already tech-driven education system, while in sub-Saharan Africa, lack of infrastructure limits adoption, highlighting a global digital divide.

Utilitarian ethics might justify AI tutors by maximizing learning outcomes globally. Yet, deontological ethics caution that replacing human teachers undermines the duty to nurture social and emotional skills. The debate reflects whether education is a public good or a service optimized for efficiency.

### **Healthcare & Scientific Discovery**

AlphaFold's breakthrough in protein folding exemplifies AI's potential to advance science. In radiology, generative models produce synthetic scans to improve diagnostic systems. ChatGPT-like systems are even tested for mental health support, though risks of unreliable advice persist. Case studies show uneven adoption: in Europe, AI accelerates drug trials, while in low-income nations, lack of infrastructure restricts impact. Ethical concerns arise regarding patient data privacy. Virtue ethics demands that healthcare AI prioritize compassion and integrity, not profit maximization.

### **Cultural & Creative Industries**

Generative AI democratizes art, music, and design. Independent musicians use AI tools to compose and distribute music globally. K-pop companies such as SM Entertainment have introduced AI-driven "virtual idols," raising debates on authenticity. From a virtue ethics perspective, replacing human performers with AI avatars risks undermining creativity as an expression of human flourishing. Yet, utilitarianism might defend virtual idols for entertaining millions at lower costs. Intellectual property law struggles to adapt—should AI-generated songs be copyrighted, and if so, by whom?

### **Governance & Policy Making**

Governments employ AI for urban planning, predictive policing, and crisis simulations. While these tools enhance efficiency, misuse threatens democratic accountability. Deepfake videos circulated during the 2020 U.S. elections and recent Indian elections illustrate risks of AI undermining trust.

Ethical frameworks matter: deontological duty requires governments to protect democratic processes from misinformation, while justice theory calls for inclusive access to AI benefits across regions.

### **Ethical Concerns**

Bias, fairness, privacy, misinformation, and intellectual property dominate ethical debates.

### **Utilitarianism**

From a utilitarian view, generative AI is justified if overall happiness outweighs harms. Increased productivity and healthcare gains may maximize utility, but risks of misinformation could cause disproportionate social harm.

### **Deontology**

Deontological ethics emphasize duties and rights. AI systems trained on biased data violate duties of fairness. Misuse in elections violates the duty to uphold truth and democratic rights.

### **Rawlsian Justice**

Rawls' theory of justice highlights fairness in distribution. AI risks concentrating wealth among tech corporations, leaving marginalized communities behind. Justice requires ensuring access to AI benefits for the least advantaged.

### **Virtue Ethics**

Virtue ethics focuses on character. AI that promotes deception (deepfakes) undermines virtues of honesty and trust. AI in healthcare that prioritizes patient well-being embodies virtues of compassion and beneficence. Together, these frameworks demonstrate that generative AI's morality depends on its governance and societal embedding.

## Conclusion & Future Scope

Generative AI is a transformative technology capable of reshaping economies, education, healthcare, culture, and governance. Its promise lies in democratizing creativity and accelerating scientific discovery, but its risks—bias, misinformation, inequality—are profound [1-8].

- Future research must address
- Explainable AI to enhance transparency.
- Global governance frameworks to prevent fragmentation.
- Equitable access strategies to bridge the digital divide.
- Ethically grounded design that integrates justice, duty, and compassion.

Ultimately, the societal impact of generative AI will not be determined by technology alone, but by the values and policies guiding its deployment. Ensuring fairness, accountability, and inclusivity is essential to transform generative AI into a driver of sustainable societal growth.

## References

1. Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021, March). On the dangers of stochastic parrots: Can language models be too big? . In Proceedings of the 2021 ACM conference on fairness, accountability, and transparency (pp. 610-623).
2. McAfee, A., & Brynjolfsson, E. (2017). *Machine, platform, crowd: Harnessing our digital future*. WW Norton & Company.
3. European Commission. (2023). *Proposal for a regulation on artificial intelligence (AI Act)*. Brussels: European Union.
4. Floridi, L., & Cowls, J. (2022). A unified framework of five principles for AI in society. *Machine learning and the city: Applications in architecture and urban design*, 535-545.
5. McKinsey. (2023). *The economic potential of generative AI: The next productivity frontier*.
6. Nemitz, P. (2018). Constitutional democracy and technology in the age of artificial intelligence. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2133), 20180089.
7. OECD. (2022). *AI in society: Opportunities and challenges*. Paris: OECD Publishing.
8. Zuboff, S. (2019). *The age of surveillance capitalism*. PublicAffairs.