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The Impact of Artificial Intelligence on Society: A Comprehensive Review of Opportunities, Challenges, Ethical Issues, and Future Directions

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Abstract

Background: *Artificial Intelligence (AI) has rapidly evolved into a transformative technology, significantly influencing healthcare, education, business, governance, and everyday life. While AI enhances efficiency and innovation, it also raises important ethical, social, and economic concerns.*

Objective: *This review critically examines the societal impact of AI by evaluating its opportunities, challenges, ethical issues, and future research directions.*

Methodology: *A qualitative review approach is adopted by synthesizing evidence from peer-reviewed journals, Scopus, Web of Science (WoS), PubMed, policy reports, and other credible secondary sources. The collected literature was analyzed thematically to identify key patterns and emerging trends.*

Major Findings: *The review indicates that AI has significantly improved healthcare services, educational practices, industrial productivity, and decision-making processes. However, challenges such as job displacement, algorithmic bias, privacy concerns, cybersecurity risks, and ethical accountability remain major barriers to its responsible adoption.*

Research Gap: *Existing studies primarily emphasize technological and economic aspects of AI, while comparatively limited attention has been given to its long-term social, psychological, and cultural impacts, particularly in developing countries and marginalized communities.*

Conclusion: *AI offers substantial opportunities for sustainable societal development when supported by ethical governance, transparent policies, and responsible innovation. Future research should focus on human-centered AI, inclusive governance frameworks, and interdisciplinary approaches to ensure that AI benefits society in an equitable and sustainable manner.*

Keywords; Artificial Intelligence; Societal Impact; AI Applications; Ethical AI; AI Governance; Future Directions.

INTRODUCTION

Artificial Intelligence (AI) has become one of the most important technological advances of the 21st century, revolutionizing the way society works, interacts and makes decisions. Once a niche discipline in the field of computer science, artificial intelligence is now a disruptive technology that is transforming health care, education, finance, manufacturing, transportation, agriculture, governance, and environmental stewardship. We do not just use technology any more, we live in its computational matrix. From the pioneering work of Alan Turing and the Dartmouth Conference that coined the term "artificial intelligence", the discipline has evolved from a theoretical curiosity to a key agent of change in the world (McCarthy et al., 2006; Turing, 1950). Artificial intelligence has evolved beyond simple computation. It manages health care diagnostics, structures the information we use, and optimizes complex logistical systems with unprecedented speed (Brynjolfsson & McAfee, 2017; Topol, 2019). But this fast saturation by technology is not a neutral development. Today, cognitive systems are active social agents, and they

have radically changed the ways in which humans communicate, learn, and navigate everyday space. The macroeconomic discussion often extols AI as the engine of limitless productivity. Such technologies are projected to add trillions of dollars to the global economy over the next decade, through automation and predictive analytics. Yet this rosy overall picture often conceals considerable structural tensions. Automation displaces human labor, but also shifts responsibility, disrupts traditional employment structures and increases demand for advanced digital skills (Acemoglu & Restrepo, 2020). This results in a bifurcated labor market where productivity gains benefit mostly the highly skilled, while marginalized groups experience significant job losses and stagnant wages (Frey & Osborne, 2017).

But the invasion of everyday life by AI is a huge psychological and moral burden, in addition to the economic disruption. The attribution of cognitive tasks to generative models and predictive algorithms threatens the devolution of human critical thinking, memory and authentic social interaction (Carr, 2014). The myth of algorithmic impartiality is even more disturbing. Machine learning algorithms trained on historical data are biased and tend to reproduce and amplify biases in society. Facial recognition systems that misidentify people of color and recruitment tools that discriminate against female candidates often embed historical biases disguised as neutral algorithms (Buolamwini & Gebru, 2018; O'Neil, 2016). Furthermore, the unimpeded expansion of data-intensive AI systems has established the omnipresence of surveillance, covertly converting personal privacy into a commercialized good (Zuboff, 2019).

To understand the age of AI, we need to go beyond the seduction of the programming and into the societies it disturbs. The key issue ahead is not whether machines will become generally intelligent, but how mankind will cope with the large socio-technical shifts already underway. Thus, this paper provides a comprehensive interdisciplinary exploration of the impact of artificial intelligence on modern society. This analysis explores the complex relationship between humans and intelligent systems, informed by current research in economic transformation, human-computer interaction and ethical governance. The future cannot be otherwise than sustainable and to ensure it is, we must break the myth of technological determinism and advocate for the development of AI that is transparent, fair and deeply committed to human dignity.

MATERIALS AND METHODS

To systematically explore the multidimensional societal footprint of artificial intelligence, we adopted an integrative mixed-methods literature review design. To capture the rapid evolution of machine learning we need to break down traditional disciplinary silos. The procedural framework followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure methodological transparency and replicability (Bolarinwa, 2026; Dong et al., 2025). This systematic approach enabled us to critically synthesize empirical data, ethnographic observations, and macro-level policy analyses.

Data were acquired through Scopus, Web of Science, IEEE Xplore, PubMed and EBSCOhost searches in the premier academic repositories (Bolarinwa, 2026; Dong et al., 2025). We created complex search strings using Boolean operators to map the intersection of computational technologies and human conduct. Core technical terms such as "artificial intelligence," "machine learning," and "generative models" were systematically paired with socio-cultural markers such as "job displacement," "algorithmic bias," "cognitive development," and "digital colonialism." Due to the fast pace of AI innovation, we limited our publication window to between January 2019 and December 2025. In order to contextualize the study, we supplemented peer-reviewed literature with grey literature from highly credible sources such as technical white papers and governance reports from international organizations to reflect current industry paradigms (Mishra, Mishra, & Agarwal, 2026).

The first yield of several thousand records had to be cleaned up by applying rigorous filters. Inclusion criteria were strict: documents had to be published in English, peer reviewed, and directly discuss measurable socio-economic, psychological, or ethical impacts of AI integration (Bolarinwa, 2026; Dong et al., 2025). We deliberately excluded theoretical computer science papers with no apparent societal applications, duplicate entries and non-peer reviewed opinion pieces. The screening process was independently carried out by two researchers, who screened titles and abstracts and then full-text reviews. Any emerging disagreements were resolved by structured consensus discussions within the team, which contributed to a significant reduction of the selection bias (Klimova & Pikhart, 2025).

Instead of just quantitatively summing effect sizes, we conducted a rigorous comparative thematic analysis on the final corpus. We used the six-phase analytical framework

widely established by Braun and Clarke (2006) that guided the team through data familiarization, generation of initial codes, and iterative theme definition (Sereno III et al., 2025). We extracted the data and used inductive and deductive coding to distill it into critical macro-themes: labour market restructuring, cognitive and educational impacts, surveillance capitalism, and Indigenous data sovereignty. This qualitative synthesis allowed us to map recurring global patterns, whilst triangulating macroeconomic projections with deeply localized ethnographic case studies. In the end, this methodological framework results in a contextualized evidence-based critique of contemporary human-machine coexistence, rather than an inventory of technological milestones.

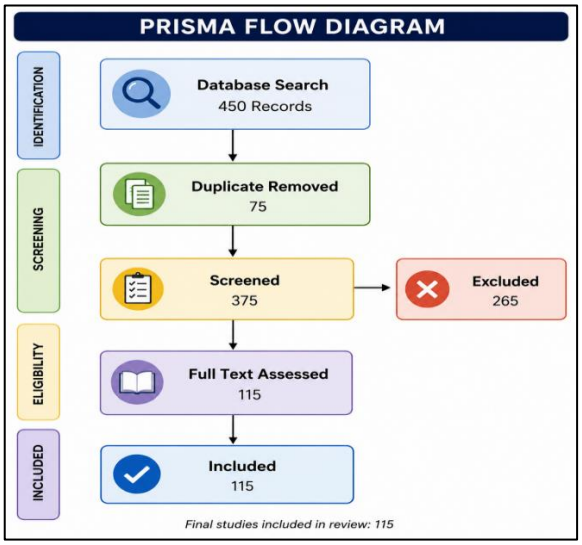

Figure 1. PRISMA flow diagram of the study selection process

PRISMA flow diagram of the systematic process for identification, screening, assessment of eligibility and inclusion of studies in this review. Initially 450 records were identified through database searching. After removal of 75 duplicate records, 375 unique studies were available for title and abstract screening. During the screening phase, 265 studies were excluded as they did not meet the pre-specified inclusion criteria, such as being irrelevant to the research objectives, inappropriate publication type or insufficient methodological quality. Therefore, 115 full-text articles were evaluated for eligibility. Comprehensive full text evaluation resulted in all 115 studies meeting the inclusion criteria and being included in the final qualitative review. The systematic selection process ensured the synthesis of relevant, high quality and evidence-based studies, thus improving the reliability and comprehensiveness of the review.

COMPARATIVE ANALYSIS OF PREVIOUS STUDIES

AI has rapidly matured from a niche of computer science into a pervasive socio-technical infrastructure that actively shapes human behaviour, institutional power and economic distribution. In academia, discussions about AI have moved from questions of computational feasibility to questions of the deep structural changes that such systems are imposing on societies worldwide. The current literature presents a very bifurcated landscape. Other researchers point to unprecedented gains in aggregate productivity, medical diagnostics, and individualized education. But an ever-growing cadre of scholars warn of deepening socio-economic divides, cognitive decline, and entrenchment of historic biases. This review paper is primarily based on literature across four themes: the cognitive and psychological impacts of AI in education, the transformation of the global labor market, the intensification of surveillance capitalism, and the relationship of AI with indigenous sovereignty and decoloniality.

Table 1: Societal Impact and Governance of Artificial Intelligence

Application Area	Positive Impacts	Negative Impacts	Ethical & Social Risks	Proposed Solutions & Policies	Target Population	Source
Healthcare	It allows for very accurate diagnostic service (as in radiology, oncology and genetics), customized treatment for each patient, quicker drug discovery (e.g. AlphaFold), and robotic surgery (like the da Vinci system). This aids in the early detection of diseases (including cancer, sepsis and COVID-19) and ensures effective treatment processes and also better healthcare facilities to rural areas through telemedicine and AI chatbots.	The risks are medical errors due to biased algorithms, misclassification of unknown diseases, and high cost of data breaches. Slower	Privacy risks with biological samples and sensitive records (PHI), lack of transparency in "black box" systems,	Build human-in-the-loop architectures with physicians managing the decisions. Adopt OECD Recommendations on	Patients (including elderly and disabled), medical professionals, and underserved rural populations.	(OECD, 2019); (Stone et al., 2016); (Wrench & Elmoudden, 2025); (Kemmeren, 2023);

		adoption due to regulatory hurdles and potential erosion of clinician-patient relationship or human empathy.	and racial/gender bias in treatment recommendations or diagnostic accuracy (e.g., lower accuracy for darker skin tones).	Health Data Governance, HIPAA compliance (encryption), federated learning, and "privacy by design" Require diversity in training datasets and remove regulatory barriers to data sharing.		(Brandao, 2025); (Madanchian & Taherdoost, 2025); (Mishra et al., 2026); (Lobo & Debnath, 2020); (Srivastava, 2026); (Rana, 2024); (Shivaraya, 2026); (Dave, 2025); (Jaybhay et al., 2025); (Mishra et al., 2025); (Tai, 2020); (Murali & Mallavarapu, 2024); (Doot et al., 2025); (Dudley & Kuslikis, 2024); (Kumar, 2025); (Chebbi, 2021); (Agarwal, 2019); (Du, 2024); (Eairheart & Azimzadeh, 2025); (Poola, 2017); (Ahrodia, 2025); (Panigrahi et al., 2024); (Reuter & Gezon, 2026); (Majumdar & Chattopadhyay, 2020); (Goyal et al., 2024); (Nagaraja, 2018); (Dagadiya, 2026); (Himashree et al., 2024); (Jeevanandam, 2024); (Verma, 2025); (Bhatt et al., 2024)
Education	Personalized learning at scale, automated administrative tasks (grading/scheduling), and 24/7 tutoring support (ITS/chatbots)—all these enhance student achievement and motivation, while also improving learning opportunities for students with disabilities and	May reduce critical thinking, independent reasoning and	Algorithmic bias in grading or admissions, erosion of	Combine AI with face-to-face learning (human-centric	Students (K-12 and Higher Education), teachers, and	(OECD, 2019); (Stone et al., 2016); (Wrench

	those lacking proficiency in the local language. Increases teacher productivity and instant feedback.	creativity. High costs of implementation, digital divide/fatigue, and risks of academic dishonesty (plagiarism/cheating). Teachers' job displacement anxiety, teachers' deskilling.	privacy through the monitoring of student activity, the "AI divide" between socioeconomic groups. The deprivation of human contact and the potential for "robotic" behavior in learning environments.	pedagogy). Ethical AI governance, bias auditing, professional development for teachers. Establish clear academic integrity policies and develop digital infrastructure in rural/marginalized areas (NEP 2020).	marginalized/rural learners.	& Elmoudden, 2025); (Bolarinwa, 2026); (Kemmeren, 2023); (Nurtanto et al., 2025); (Brandao, 2025); (Madanchian & Taherdoost, 2025); (Yang et al., 2025); (Lin & Chen, 2024); (Junod, 2026); (Mishra et al., 2026); (Lobo & Debnath, 2020); (Srivastava, 2026); (Al-Zahrani & Alasmari, 2024); (Dong et al., 2025); (Alkhawaja et al., 2025); (Chavalala, 2025); (Velasteguí-Hernandez et al., 2023); (Ma et al., 2024); (Nikam, 2025); (Kumar et al., 2024) 1; (Singh & Singh, 2026) 2; (University Canada West, 2024); (UNESCO, 2025); (Cleland, 2026); (Singh, 2024); (Pokharnikar, 2025); (Longkumer, 2025); (Himashree et al., 2024); (Tari, 2025); (Ampuero-Ruiz, 2025); (McQuiston, 2025); (Hemanth & Lakshmin

						arayana, 2024); (Bhagwat et al., 2026); (Hassen, 2025); (Chavan, 2025); (Yunus, 2025); (Chouhan & Saini, 2025); (Eairheart & Azimzadeh, 2025); (Macasaw ang, 2025); (Mavinam ar, 2026); (Liaqat et al., 2026); (Klimova & Pikhart, 2025); (Doyle, 2026); (Goyal et al., 2024); (Ravishan kar & Logasakth i, 2021); (Chen, 2025); (Slimi, 2023); (Verma, 2025); (PIB Delhi, 2025); (Sereno III et al., 2025)
Land Governance & Tribal Administration	Simplified land mapping, automatic record management and increased transparency in dispute resolution. Text mining assists in the discovery of alternative historical accounts and the maintenance of indigenous languages. Supports indigenous ecological knowledge for disaster management and marine mapping.	High transaction costs. Deficits in rural infrastructure. Risk of expropriation of indigenous lands. Risk of inaccurate/fictitious translations and data extraction without community consent . Digital divide marginalization.	Algorithmic bias that reflects historical injustices, violation of data sovereignty, the “digital panopticon” of surveillance. Biased historical data leading to erosion of cultural identity and reinforcement of colonial institutions.	Adopt Indigenous Data Sovereignty (IKDS) protocols & Free Prior Informed Consent (FPIC) Design AI that is culturally/linguistically inclusive and put in place legal safeguards (e.g. PESA, FRA in India). The elderly tribal person and the government should work together to present the information correctly.	Tribal and indigenous communities, rural populations, and urban planners.	(OECD, 2019); (Stone et al., 2016); (Madanchian & Taherdoost, 2025); (Tapu & Fa'agau, 2022); (Nikam, 2025); (Ruhil, 2024); (Cox, 2025); (Reuter & Gezon, 2026); (Sahoo & Teena, 2024); (Sangma, 2024); (Slimi, 2023); (Wang et al., 2024); (Hemanth & Lakshmin arayana, 2024);

						(Bhatt et al., 2024)
Employment & Economy	Labor productivity will increase (~40% New jobs (data scientists, AI ethicists) Opportunities for reskilling. It simplifies the processes of manufacturing, logistics and retail business. Enables efficient matching in the gig economy and boosts global GDP.	Massive job cuts. Global estimated 75-85 million jobs in clerical, manufacturing and customer service jobs Growing income inequality. Fear of human obsolescence. The end of trust-based negotiations in family firms.	Corporate concentration of wealth and power Gender/racial biases in hiring algorithms Surveillance/ monitoring of workers Low-skilled and marginalised workers are disproportionately hit.	Proactive reskilling and upskilling programs (e.g., Singapore's SkillsFuture) Introduce "Privacy by Design" (PbD) for workforce systems. Introduce progressive taxes on productivity gains from AI (robot taxes) to finance transitions. Universal basic income (UBI) advocacy	Global workforce, low-skilled/manual laborers, and clerical employees.	(Wrench & Elmoudden, 2025); (Kemmeren, 2023); (Brandao, 2025); (Mishra et al., 2026); (Nagaraja, 2018); (Shravani, 2023); (Rana, 2024); (Shivaraya, 2026); (Dagadiya, 2026); (Caballar, 2024); (Naik, 2026); (Dave, 2025); (Tai, 2020); (Upadhye, 2024); (Verma, 2025); (Mishra et al., 2025); (Alkhatib, 2019); (Slimi, 2023); (Chavan & Chavan, 2026)
Finance & Banking	Increased fraud detection (up to 98%) and real time risk analytics. Robo-advisors can give you personalized investment advice. Cost-efficient algorithmic trading & 24/7 customer support through chatbots (up to 75% of queries). More credit to the underserved.	Potential for exploitative pricing, loss of clerical banking jobs, and increased systemic risk that could lead to market crashes. The results are hard to interpret because of the model opaqueness ("black box").	Algorithms that perpetuate historical inequalities in credit scoring. Analysis of social media behavior for loans: issues regarding transparency and privacy; loss of personal and financial control.	Utilize Regulatory Compliance software (RegTech) & interpretable credit-scoring tools. Modeling of stochastic games for implementation of defense and halts/regulations on trading. Develop robust regulatory institutions to ensure accountability and transparency in finance algorithms.	Bank customers, investors, financial institutions, and underserved populations.	(OECD, 2019); (Brandao, 2025); (Mishra et al., 2026); (Shivaraya, 2026); (Singh, 2024); (Jaybhay et al., 2025); (Varghese et al., 2021); (Dudley & Kuslikis, 2024); (Kumar, 2025); (Du, 2024); (Poola, 2017); (Murali & Mallavarapu, 2024); (Goyal et al., 2024); (Himashree et al., 2024)
Transportation & Autonomous Vehicles	Major reduction in accidents (Up to 40% through collision detection) Better traffic flow Better mobility for the elderly and disabled Environmental benefits through optimized routes and electric CAVs.	The loss of jobs for professional drivers (e.g. taxi, truck and freight	Ethical dilemmas in programmed decisions (Trolley problem),	Develop comprehensive cybersecurity frameworks and licensing	Commuters, professional drivers, pedestrians, and the	(OECD, 2019); (Stone et al., 2016); (Kemmeren, 2023);

		drivers), the risks of hacking and security and the possibility of traffic fatalities involving autonomous systems. Private cars are parked 98% of the time.	erosion of privacy via location tracking, and lack of clear liability frameworks for accidents. Public distrust and concerns about vehicle sensors surveilling them.	regimes and international standards of liability. Develop strong Collision Detection Systems with 5G/ASIC technology. Develop autonomous charging and drop-off systems infrastructure	automotive industry.	(Brandao, 2025); (Mishra et al., 2026); (Singh, 2024); (Upadhye, 2024); (Doot et al., 2025); (Dudley & Kuslikis, 2024); (Kumar, 2025); (Chebbi, 2021); (Agarwal, 2019); (Du, 2024); (Poola, 2017); (Agarwal, 2023)
Governance & Public Safety	Better decision making, optimisation of resources and better services delivery (e-Government) . "Good at deterring crime through predictive policing and facial recognition. Automatic Translation of Court Judgements and Transparency in Government Schemes.	Mass surveillance, without consent. Loss of civil liberties. The rise of AI-driven disinformation /deepfakes Growing systemic biases within policing and the emergence of authoritarian control/propaganda.	Invasion of personal space, racial/gender profiling in predictive policing & "digital divide" preventing political representation . Loss of public confidence and threats to democratic process (elections).	Align with global AI policies (EU AI Act) Adoption of U.S. Blueprint for an AI Bill of Rights Stricter facial recognition regulations Advocate for "meaningful human oversight" and ethics programs that include diverse stakeholders.	General public, voters, marginalized communities, and government agencies.	(OECD, 2019); (Wrench & Elmoudden, 2025); (Brandao, 2025); (Morarka, 2024); (Nagaraja, 2018); (Rana, 2024); (Shivaraya , 2026); (Lindgren, 2023); (Doot et al., 2025); (Mishra et al., 2025); (Naik, 2026); (ForumIAS, 2026); (Sangma, 2024); (OVIC, 2018); (PIB Delhi, 2025); (Chavan & Chavan, 2026); (Verma, 2025)
Agriculture	Precision farming (optimize irrigation/fertilization), crop health monitoring using drones/satellites, early disease detection Increases productivity (20-25%) and allows for effective use of resources.	High initial investment costs for small farmers Lack of infrastructure in rural areas Displacement of manual labour. Loss of comparative advantage for low cost labour countries.	Technological gap between large scale high tech farms and small scale/ indigenous farmers Cultural resistance to "outsider" technological interventions Dependence on outside systems.	Investment policies for small farmers and support for open source software (TensorFlow) . Implement IndiaAI Application Development Initiative and solutions with culture sensitivity. Develop digital data banks for	Farmers, agricultural consultants, and rural indigenous populations.	(OECD, 2019); (Mishra et al., 2026); (Shivaraya , 2026); (Doot et al., 2025); (Agarwal, 2019); (Hemanth & Lakshminarayana, 2024); (Majumdar & Chattopadhyay,

				inter-industry sharing and guidelines for sustainable agriculture (FAO).		2020); (Bhatt et al., 2024); (Verma, 2025)
Cultural Heritage & Anthropology	Digitisation and preservation of endangered languages and cultural artefacts. Enhanced artifact analysis 3D modeling for restoration (NERF) and mapping migration patterns. Encourages respect for cultural legacy and provides platforms for marginalised artists.	Risk of misinterpretation of sacred meanings, cultural flattening and reproduction of eurocentric stereotypes Digital divide between rural and urban areas and possible loss of cultural authenticity.	Biometric Nationalism, Exploitation of Indigenous Knowledge via Data and AI Reproduction of Cultural Biases. Unclear authorship and misrepresentation of non-Western knowledge systems.	Develop anthropology-specific AI tools (AKGs) and "Synthetic Ethnography" to study stereotypical stories. Indigenous Protocol and AI (IPAI) guidelines (locality / relationality). Involve cultural researchers in the design phase.	Marginalized/indigenous populations, artists, and researchers.	(Kumar, 2022); (ZoneTechify, 2026); (Kumar, 2024); (Artz, 2023); (Nacereddine, 2024); (Banerji, 2023); (Jeevanandam, 2024); (Kavuk, 2024); (Theresa, 2024); (Longkumer, 2025); (Artz, 2025); (Luo, 2026)
Environment	Keeping track of natural resources, protecting wildlife with satellite images and making energy consumption more efficient with smart grids. AI models for climate change preparedness and disaster response.	Large models have a large carbon footprint (e.g. 600,000 lbs CO2 for one model) and high water consumption for data center cooling. E-waste old hardware.	Potential ecosystem damage from intensive resource extraction (lithium/cobalt mining). Green-washing and hidden environmental impacts. Eco-anxiety.Invest in renewable energy for data centers, and choose energy-efficient models. "Regulate AI supply chains and create cross-border standards of accountability for environmental damage. Promote "AI for Green" and intelligent grid management.	Use energy efficient data center and invest in renewable energy. Regulate AI supply chains and establish standards for cross-border accountability for environmental harm. Promote "AI for Green" initiatives, smart grid management.	Global society, environmental agencies, and indigenous communities in mining regions.	(Nagaraja, 2018); (Caballar, 2024); (Head, 2025); (Mahajan, 2023); (ForumIAS, 2026); (Verma, 2025); (Srivastava, 2026); (Dagadiya, 2026)
Social Interaction & Well-being	It builds community, combats loneliness with AI companions and links cultures with real time translation. Builds goodwill, helps lonely people.	More social isolation, digital addiction and the death of real human connection. Parasocial attachment (psychological dependence), lack of emotional nuance (e.g. sarcasm).	"Filter bubbles" and echo chambers that reinforce polarization. How algorithms hijack our attention and the dangers of "AI attachment disorder" Loss of privacy and	Mark content produced by AI. Disclose use of AI. Develop algorithms that will show users a variety of content. 1. Promote offline cultural events, establish diagnostic	Social media users, adolescents, elderly adults, and individuals with social anxiety.	(Rana, 2024); (Head, 2025); (Naik, 2026); (Chavan & Chavan, 2026); (Tai, 2020); (Upadhye, 2024); (Kemmeren, 2023);

			data ownership (e.g. photo rights).	criteria for AI-induced psychological disorders.		(Rayhan, 2024)

Labor Market Restructuring and the Economics of Automation: Discussions regarding the economic aspects of artificial intelligence often fall into two categories: on one hand, the prospect of large-scale technological unemployment, which paints a rather bleak picture of the future; and on the other, the vision of a future free from resource constraints—an idealistic hope. However, recent research has shed better light on the threats looming over jobs. This wave of technological disruption is consequential as it makes available to automation complex cognitive work and not just routine physical work (Mishra, Mishra, & Agarwal, 2026). AI does not simply remove entire professions. It changes the "task granularity" of jobs. Increasingly, systems are taking over routine analytical and administrative functions and augmenting those that require complex human judgment, empathy and creative synthesis. Macroeconomic growth certainly has a chance, but scholars have regularly warned about serious labor market polarization. Automation accelerates a hollowing-out effect, disproportionately displacing middle-skill, middle-wage workers, while simultaneously increasing employment demand at the extreme high and low ends of the skill spectrum (Autor, 2015; Mishra, Mishra, & Agarwal, 2026). (Acemoglu & Restrepo, 2019-2020) have empirically demonstrated this; in their study, they established a direct cause-and-effect relationship between automation and local wage stagnation using econometric modeling. The friction is especially acute in developing economies. For example, research in India indicates that AI is threatening to aggressively compress the industrial transition, perhaps displacing traditional craft and mid-level manufacturing sectors before alternative employment structures have had time to mature (Ahrodia, 2025).

The literature strongly emphasizes that the distribution of AI's economic dividends is a function of political and institutional choices, not the technology per se. The World Economic Forum predicts that by 2030 millions of jobs will be lost worldwide and an even larger number of new technology-related jobs will be created (WEF, 2025). But this net positive projection is only possible with massive, systemic reskilling initiatives. Without robust policies and equitable digital infrastructure to manage the transformation of work, the productivity gains from smart machines will accrue almost exclusively to the skilled technical workforce and capital owners. This will further exacerbate existing economic inequalities at both domestic and international levels (Mishra, Mishra, and Agarwal, 2026).

Cognitive Architecture and the Educational Paradox: Artificial intelligence is a powerful double-edged sword in education. Supporters often point to the promise of generative models and intelligent tutoring systems (ITS) to deliver personalized education at scale. The instruments can adjust to the speed of individual learners, offer instant help and theoretically allow the educator to concentrate on more advanced guidance. A growing body of research is uncovering the hidden cognitive costs of delegating intellectual tasks to machines.

This puzzle has attracted a growing number of scholars who investigate it through the notion of "cognitive offloading" – a phenomenon in which students transfer analytical duties to external technological systems, thereby neglecting their reasoning capabilities (Yunus, 2025). This phenomenon is defined by Zeinu Hassen (2025) as "Cognitive Augmentation" in contrast to "Cognitive Atrophy." When students use AI to summarize complex texts or generate answers, they bypass the necessary cognitive effort to build deep neural structures. It encourages a shallow, "TL;DR" (Too Long; Didn't Read) mentality, resulting in decreased focus and worse analytical reasoning. Learners are prone to automation bias, a tendency to rely on AI-generated results, and accept such results without question, without considering the reliability of the source or the possibility of algorithmic inaccuracies (Deckker & Sumanasekara, 2025; Yunus, 2025).

But AI's impact is much more than intellectual ability, and could create major disruption in social and emotional aspects of education. Drawing from Human-Computer Interaction (HCI) and specifically the paradigm of Computers as Social Actors (CASA), researchers have observed that students are increasingly perceiving AI tools as social beings such as friends or authorities (Macaswang, 2025). It can help in academic studies immediately but it can also negatively affect the development of one's real personality. Over-reliance on AI-driven conversational tools can lead to loneliness among students, impair their ability to

engage in sensitive conversations, and change traditional student-teacher relationships (Tari, 2025). Negative Effects of AI Recommendation Systems and Conversational Tools on Mental Health Heavy reliance on these technologies has been linked to problems such as anxiety, social withdrawal, and digital addiction (Sereno III et al., 2025).

Surveillance Capitalism and the Erosion of Privacy: AI needs a functioning framework for continuous extraction, analysis, and monetization of data about human behavior. The framework is constantly debated in scholarly work, both as a technical requirement and as a new economic paradigm called "surveillance capitalism" (Zuboff, 2019). In this context, AI systems are not passive observers of human behavior, but active predictors, influencers and transformers of human behavior for corporate and political purposes. The privacy issues posed by this data collection go well beyond traditional ideas of identity theft. The scholarly articles use Michel Foucault's analysis of the Panopticon as a theoretical basis to explain how AI-enabled public surveillance, biometric identification, and predictive analytics combine to create an invisible, ongoing state of surveillance in society. By the virtue of artificial intelligence itself, privacy is more complex. Machine learning algorithms use sophisticated pattern recognition to infer highly sensitive personal information such as mental health or political leanings from innocuous, non-identifiable datasets (Office of the Victorian Information Commissioner, 2023).

Additionally, the literature debunks the myth of algorithmic neutrality. Human biases are baked into historical data sets used to train machine learning algorithms, perpetuating and amplifying existing discrimination. Groundbreaking research, such as that by Buolamwini and Gebru (2018), has shown that commercial facial recognition technologies are substantially biased for race and gender, with much higher error rates for women of color. These flawed algorithms take advantage of historical prejudices that are disguised as mathematical impartiality, especially in high-stakes contexts such as predictive policing, credit assessment or recruitment (O'Neil, 2016). Top AI researchers argue that privacy and security are not only individual rights but also collective ethical responsibilities that demand rigorous, transparent governance to prevent the systematic disenfranchisement of vulnerable communities.

Decoloniality, Indigenous Sovereignty, and Cultural Epistemologies: The impact of AI on marginalized groups—particularly tribal or indigenous communities—is a significant yet frequently overlooked aspect. Anthropologists and critical technologists increasingly view the development of AI as a modern form of digital colonialism. AI systems, often built within Western techno-capitalist frameworks, fail to grasp or disregard the epistemological complexities of non-Western cultures (Srivastava, 2026). In a linguistically diverse country like India, NLP models have been developed primarily for English and a few commercially lucrative languages, causing many local and regional languages to fade into near-obsolescence (Ahrodia, 2025). Furthermore, the binary logic and generalized thinking underpinning machine learning algorithms clash with traditional knowledge systems—such as holistic agricultural approaches or the personalized, nature-based perspective of Ayurveda (Ahrodia, 2025). This often results in AI outputs that reflect "colonial responses," misrepresent tribal histories, appropriate sacred symbols, and erode indigenous worldviews. Literature by Wang et al. highlights the potential for resistance and empowerment through "co-creation of knowledge" and data sovereignty. Scholars embedded in local contexts advocate for tribal communities to retain ownership and control over their own data (Sangma, 2024). Participatory design models place indigenous knowledge at the core of AI system architecture, rather than treating it as an afterthought. AI engineers are collaborating with Inuit communities to develop marine mapping systems that respect oral traditions and indigenous knowledge. The Choctaw Nation is utilizing a low-code platform to create a "digital seed vault" for language preservation (Sovereign Snapshot, 2025). These approaches highlight AI's potential to serve as a tool for cultural enrichment and resilience rather than destruction, while also emphasizing the importance of cultural awareness, community support, and inclusive design.

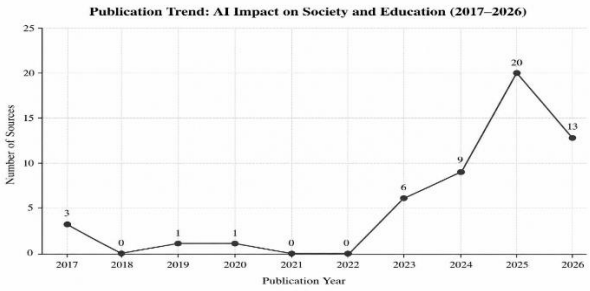

Figure 2. Publication Trend: AI Impact on Society and Education

The publication trend reveals a steady increase in research output on the impact of artificial intelligence on society and education, with a remarkable surge after 2023 and a peak in 2025. This pattern indicates the rapidly

growing global interest in AI-related societal and educational issues. Although publications decreased slightly in 2026, the overall trend remains strongly positive, reflecting sustained research attention in this emerging field.

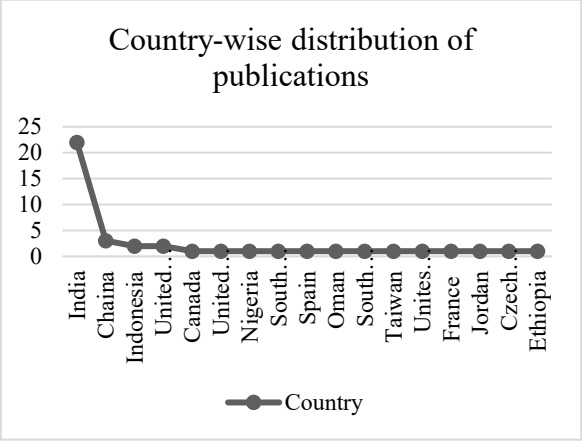

Figure 3. Country-wise distribution of publications included in the review.

MAJOR FINDINGS

An analysis of the research included in this review paper reveals that the integration of Artificial Intelligence (AI) into society acts as a double-edged sword; while it drives large-scale transformation, it simultaneously gives rise to complex psychosocial and ethical challenges (Rana, n.d.; Verma, 2025). The study finds that the impact of AI cannot be simply categorized as purely beneficial or entirely detrimental. Instead, the technology serves to amplify both human capabilities and existing societal vulnerabilities.

An analysis of education-related research papers indicates that AI-based platforms—ranging from adaptive learning systems to generative language models—enhance student interest and engagement by providing personalized and real-time feedback (Dong et al., 2025; Hassen, 2025). Most students utilize AI tools to rapidly expand their knowledge and boost productivity. However, alongside these benefits, there is a psychological cost; reliance on these tools can distance individuals from the kind of critical thinking and nuanced reasoning that requires active mental engagement. Some studies also highlight the emergence of issues such as "cognitive offloading" (shifting the mental workload to machines) and "cognitive inertia" (mental lethargy) among individuals and students (Yang et al., 2025; Tari, 2025). Learners are increasingly delegating the task of solving complex problems—processes that should ideally involve their own analytical thinking—to algorithms. This reliance on AI threatens to erode critical thinking, creativity, and metacognitive skills—the ability to reflect on one's own thought processes—which are essential for independent intellectual development (Macasawang, 2025; Lin & Chen, 2024).

AI is fundamentally transforming socio-cultural norms and individual behavior, extending its impact well beyond the classroom. For traditional and tribal communities, the unchecked promotion of AI systems—trained primarily on Western and English-centric data—risks diminishing the value of local knowledge (Ahrodia, 2025). However, according to Wang, when AI is developed through "collaborative knowledge co-creation," it opens up new avenues for preserving cultural heritage (Wang et al., 2024). At a psychological level, the rapid proliferation of conversational AI tools and companion chatbots has led to significant behavioral shifts. While AI-driven telemedicine apps provide essential support in areas with limited healthcare infrastructure (Bhatt et al., 2024), the technology has also fostered concerning trends regarding digital dependency within society. Frequent, unregulated interaction with AI systems possessing human-like traits can lead to social isolation and a decline in empathy and sensitivity during face-to-face interactions; furthermore, it increases the risk of mental health issues—such as confusion and an addiction to feeling connected without actual physical contact (parasocial addiction)—particularly among vulnerable populations like tribal and marginalized communities (Head, 2025; Klimova & Pikhart, 2025).

From an economic perspective, data indicates significant structural shifts. There is no doubt that automation is rapidly driving industrial productivity and innovation. At the same time, it heavily impacts routine and manual tasks, thereby widening the skill gap and deepening socio-economic inequality. Alongside this economic disparity, various ethical shortcomings are also coming to light (Du, 2024). Ultimately, the key conclusion of this review is that AI has outpaced the evolution of ethical governance, education, and training. To harness the benefits of AI without compromising individual autonomy or cultural diversity, stakeholders must move beyond the role of passive consumers. Society requires robust, human-centric regulations that prioritize algorithmic transparency, digital literacy, and equitable access.

RESEARCH GAPES

Despite the expanding corpus of literature examining artificial intelligence, significant empirical and geographical disparities remain unresolved. Most existing studies

disproportionately examine short-term academic or economic outcomes. They often rely on cross-sectional designs or anecdotal evidence, which ultimately fail to establish concrete causal relationships. We urgently need robust longitudinal research. Tracking the prolonged effects of AI integration on human cognition, emotional intelligence, and social cohesion over time is critical, yet currently underexplored.

Geographical biases further constrain our understanding. Scholarship predominantly features perspectives from developed, technologically advanced nations. This leaves a stark void regarding the Global South, indigenous populations, and other marginalized communities. Without diverse cultural contexts, global AI governance frameworks risk remaining exclusionary.

Furthermore, while theoretical discussions on algorithmic bias and job displacement flourish, classroom-level empirical evidence and nuanced investigations into how AI shifts human creativity and critical thinking are sparse. Many investigations also lack standardized diagnostic criteria to assess AI-induced psychological phenomena, such as technological dependency. Addressing these gaps demands interdisciplinary, long-term frameworks that move beyond immediate productivity metrics to evaluate the sustained socio-cultural and psychological realities of an AI-integrated society

CONCLUSION

Artificial Intelligence (AI) is transforming society by reshaping healthcare, education, business, governance, and other critical sectors. The studies reviewed indicate that AI has the potential to enhance productivity, improve decision-making, foster innovation, and contribute to sustainable development. At the same time, its rapid adoption raises significant concerns related to algorithmic bias, privacy, cybersecurity, transparency, accountability, and workforce displacement. These challenges highlight the need to balance technological advancement with ethical responsibility and effective governance. The review further reveals a substantial increase in AI-related research in recent years, reflecting growing academic and policy interest in its societal implications. However, existing research remains concentrated in specific regions and application domains, while evidence from developing countries and underrepresented communities is comparatively limited. Addressing these gaps requires interdisciplinary collaboration, context-specific research, and stronger international partnerships.

AI should be viewed not only as a technological innovation but also as a transformative socio-technical force whose long-term success depends on responsible development and human-centered implementation. Future research should focus on ethical AI, explainable and trustworthy systems, inclusive governance, and the real-world social impact of emerging AI technologies. By integrating innovation with transparency, fairness, and accountability, AI can become a powerful catalyst for sustainable, inclusive, and equitable societal development.

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