Leveraging AI to Bridge the Digital Divide and upgrade the Alternative Dispute Resolution System

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ABSTRACT

This study examines the legal and policy implications of artificial intelligence and automation in mitigating the digital divide within developing nations. Employing a mixed-methods approach, the research assesses the role of AI and automation in key sectors, including education, healthcare, agriculture, and economic development. The findings establish that AI-driven personalized learning frameworks enhance student engagement and academic achievement, while AI-assisted diagnostics and automated patient care improve healthcare accessibility and outcomes. Furthermore, precision agriculture and AI-powered crop management contribute to increased efficiency in food production, mitigating waste and optimizing yields.

Additionally, AI and automation facilitate by upgrading the Alternative Dispute Resolution, labour market expansion, enhance market accessibility, and promote economic advancement. Notwithstanding these benefits, various legal and structural barriers impede widespread adoption. To address these challenges, this study advocates for investment in robust digital infrastructure, the implementation of targeted educational initiatives, the cultivation of cultural acceptance, and the establishment of comprehensive policy reforms. The research provides critical insights for policymakers, non-governmental organizations and private sector stakeholders, emphasizing the necessity of a coordinated, legally sound framework to harness AI and automation for sustainable socioeconomic development. By effectively addressing the digital divide, AI and automation present an opportunity to advance global development through equitable and legally structured technological integration.

Keywords: Artificial Intelligence, Digital Divide, Healthcare, Innovation, Sustainable Development, Alternative Dispute Resolution

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Introduction

Artificial Intelligence (AI) and automation are increasingly playing a transformative role across governance, economic development, and legal service delivery. Particularly, their application in upgrading the Alternative Dispute Resolution (ADR) system signifies a paradigm shift in how disputes can be managed with speed, neutrality, and access. In parallel, AI holds significant potential to bridge the digital divide, expanding the labor market, enabling inclusive economic growth, and democratizing access to justice. However, realizing this potential is constrained by several legal, ethical, infrastructural, and policy barriers. This paper explores the intersection of AI, digital equity, and legal reform, emphasizing how ADR can be a model domain for ethical AI integration.

Role of AI in Alternative Dispute Resolution (ADR)

Automation of Dispute Resolution Processes: AI tools can facilitate online negotiation, mediation, and arbitration by automating repetitive legal tasks, document review, and sentiment analysis. Chatbots and NLP-driven virtual assistants help parties file claims, receive legal information, and track case progress, reducing the burden on human arbitrators and the judiciary.

Predictive Analysis and Decision Support: AI-based platforms provide predictive analytics on case outcomes, drawing on legal precedent and data modeling to offer settlement suggestions. This improves decision-making speed and consistency in ADR proceedings.

Accessibility and Language Processing: Natural Language Processing (NLP) helps overcome linguistic barriers, making ADR accessible to diverse populations. Translation AI and speech-to-text tools increase inclusivity, especially in multilingual jurisdictions.

AI and Bridging the Digital Divide: Democratizing Access to Legal and Economic Systems: By lowering costs and offering scalable platforms, AI allows previously marginalized communities to access dispute resolution mechanisms and legal advisory tools.

Employment and Market Inclusion: AI creates new job opportunities in areas like remote case management, legal tech startups, and online legal education, particularly for rural and underserved populations.

Digital Infrastructure and Inclusion Gaps: However, disparities in internet access, device affordability, and digital literacy impede equal participation. Bridging the digital divide requires public-private investment in broadband infrastructure, mobile-first legal services, and regional language AI models.

AI applications in various sectors-

AI in Healthcare in India:

AI applications in healthcare offer promising solutions to challenges faced by developing countries in delivering effective and accessible healthcare services. AI-powered diagnostics can enhance the accuracy and speed of disease identification, especially in regions with limited

access to healthcare professionals. Remote patient monitoring and predictive analytics facilitate early intervention, leading to improved health outcomes. For instance, AI algorithms are being used to analyze medical imaging, aiding in the early detection of diseases such as tuberculosis and cancer[2].

Automation in Agriculture in India:

In several states of India, small-scale farmers have begun using automated irrigation systems that use sensors to monitor soil moisture and automate watering schedules. This technology optimizes water usage and improves crop yields. The adoption of automated irrigation was facilitated by government subsidies and local NGOs that provided training and support to farmers. The tangible benefits of reduced water use and increased crop yields encouraged more farmers to adopt the same.Some farmers were initially hesitant to trust the technology and lacked the technical skills to operate and maintain the systems. Effective government incentives and NGO support played crucial roles in overcoming initial resistance and skill gaps, demonstrating the importance of supporting infrastructure when introducing agricultural automation. Agriculture, a cornerstone of many developing economies,stands to benefit significantly from AI technologies. Precision agriculture, enabled by AI,optimizes resource use, enhances crop yields, and mitigates environmental impact. AI applications in crop monitoring, pest control, and predictive analytics contribute to sustainable agricultural practices, ensuring food security and bolstering the livelihoods of farmers[3]

In India, where agriculture is a cornerstone of the economy, AI is being leveraged to enhance precision farming practices[4] Companies like CropIn are using AI algorithms to analyze satellite imagery, weather data, and soil conditions. Smallholder farmers receive personalized recommendations for crop management, irrigation, and pest control through mobile applications[5]. This AI-driven approach optimizes resource use, improves yields, and contributes to sustainable agriculture.

AI applications in Education in India

AI-driven innovations in education have the potential to address the unique challenges faced by developing countries in providing quality education. Personalized learning platforms powered by AI can adapt to individual student needs, overcoming resource constraints and fostering inclusive education. AI applications also assist in automating administrative tasks, allowing educators to focus on interactive and personalized teaching methods.[6]

Mobile Banking in India

Mobile banking has emerged as a crucial tool in India, advancing financial inclusion and bridging gaps in access to formal banking services, particularly in rural and underserved

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[2] Topol, E.J. (2019) Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again. Basic Books.

[3] Huseynov M.J. (2020). Problems of sustainable development of the agrarian sector. Baku: Nurlan, 304

[4] R.K. Tiwari & P.K. Jaga, *Precision Farming: A New Approach in Indian Agriculture*, [10.] [International Journal on Agriculture] [20-25] (2012)

[5] Pallavi Shaktawat & Sharmistha Swaymprava, *Digital Agriculture: Exploring the Role of Information and Communication Technology for Sustainable Development*, [20.] [International Journal of Social Science and development] [80-81] [2024]

[6] Working Report of Global Education Monitoring report 2019https://gem-report-2019.unesco.org/

regions. The integration of Artificial Intelligence and automation has revolutionized mobile banking by enhancing efficiency, security, and accessibility. AI-driven technologies, such as fraud detection algorithms, chatbot-assisted transactions, and automated loan processing, have significantly improved banking operations, reducing costs and increasing user engagement. However, the adoption of AI in mobile banking is accompanied by significant legal and policy challenges, including data privacy concerns, regulatory inconsistencies, algorithmic biases, and cybersecurity risks. India's legislative framework, including the Digital Personal Data Protection Act, 2023[7],and regulations issued by the Reserve Bank of India[8],aims to protect consumers and establish accountability in AI-driven financial services, yet gaps remain in ensuring transparency and fairness in algorithmic decision-making. The absence of a comprehensive AI governance framework necessitates further legal reforms to address ethical risks and discriminatory practices in automated financial solutions. Additionally, digital literacy remains a barrier, as marginalized populations often struggle to access and understand AI-enabled banking services. To bridge the digital divide effectively, policymakers must prioritize AI regulations[9], expand financial awareness programs[10],invest in digital infrastructure[11],and ensure ethical AI practices that promote inclusivity[12].By fostering a secure and equitable mobile banking ecosystem, AI and automation can empower individuals, enhance economic participation, and contribute to sustainable development in India.

Legal and Ethical Challenges

Intellectual Property and Generative AI

Generative AI models often use copyrighted materials without explicit authorization, leading to lawsuits over unauthorized scraping, stylistic imitation, and unlicensed outputs. The question of whether training AI constitutes fair use remains unresolved across jurisdictions.

Ownership and Liability: Courts have yet to consistently define whether AI-generated content qualifies for copyright protection. The U.S. Copyright Office mandates human authorship, creating uncertainty around outputs generated without direct human involvement.

Algorithmic Bias and Fairness: Bias in training data may lead to discriminatory outcomes in AI-driven ADR. A lack of representation across cultural, linguistic, and gender contexts undermines fairness. Inclusive datasets and workforce diversity are essential for equitable AI.

Privacy and Transparency: AI platforms used in ADR must maintain data privacy, transparency in algorithms, and auditability of automated decisions. Without clear governance, public trust in AI systems remains fragile.

Regulatory and Structural Reforms

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[7] Digital Personal Data Protection Act, 2023, Government of India

[8] Reserve Bank of India, *Master Directions on Digital Payment Security Controls*, 2021

[9] NITI Aayog, *National Strategy on Artificial Intelligence*, 2018

[10] Ministry of Electronics and Information Technology, *Digital Literacy and Financial Inclusion Program*, 2024.

[11] Indian Banks' Association, *AI-Driven Banking Innovations*, 2023

[12] Ministry of Finance, *Report on Digital Lending and AI-Based Credit Scoring*, 2022.

National and Global Governance Frameworks: Ethical AI governance frameworks should be implemented at national and international levels, promoting transparency, accountability, and privacy. These must include AI-specific legal safeguards for dispute resolution.
Compulsory Licensing and Copyright Reform:
To balance innovation and IP rights, jurisdictions may explore compulsory licensing regimes for AI training datasets, allowing controlled access to copyrighted works. Such frameworks must also respect creators' moral and economic rights.
Cultural and Educational Initiatives: Building cultural acceptance of AI in legal services requires educational outreach and targeted training for both legal professionals and the general public. Law schools and bar councils should incorporate AI ethics, legal tech, and cyber-forensics into their curricula.
Infrastructure Development and Investment: Robust digital infrastructure is a prerequisite for equitable ADR modernization. Governments must invest in AI-ready platforms, language localization, cybersecurity, and user-centric legal technology tools.

Case Study: Global Jurisdictional Approaches
European Union: The EU mandates compliance with its Copyright Directive for AI training material and supports AI Act regulations focusing on high-risk AI applications, including legal services.
United States: The U.S. applies conventional copyright infringement tests with varied outcomes. There is no specific AI copyright law, and cases often hinge on fair use interpretation.
India and the Global South: India has begun integrating AI in judicial and arbitration platforms. However, legal frameworks specific to AI in ADR are still emerging, necessitating proactive policy interventions.

Challenges of AI and Automation to Bridge the Digital Divide-
Barriers of Infrastructure-
The lack of technological infrastructure is a major barrier to the deployment of Al solutions in developing countries. In many regions, unreliable power supplies, insufficient broadband internet access, and limited availability of hardware such as computers and smartphones can severely limit the adoption and effectiveness of Al technologies[13].For All AI systems to function effectively, they require a stable and fast internet connection, which is not always available in remote or impoverished areas. Investments in physical infrastructure, such as telecommunications networks and electricity supply, are essential precursors to the successful integration of advanced technologies.[14] One significant impediment to the effective

[13] Olagbaju OO, Olaniyi OO. Explicit and differentiated phonics instruction on pupils' literacy Skills in gambian lower basic schools. Asian Journal of Education and Social Studies. 2023;44(2):20-30. Available:https://doi.org/10.9734/ajess/2023/v44i2958
[14] Olaniyi FG, Olaniyi OO, Adigwe CS,Abalaka Al, Shah NH. Harnessing predictive analytics for strategic foresight: A comprehensive review of techniques and cryptocurrency volatility for secure US applications in transforming Raw data to employee retirement benefits: Bitcoin ETF case study. Asian Journal of Economics, actionable insights. Asian Journal of Business and Accounting. 2023;23(22):441-459.Available:https://doi.org/10.9734/ajeba/2023/v23122116

implementation of AI in developing countries lies in infrastructure limitations. Reliable access to high-speed internet, robust computing resources, and advanced data storage facilities are often prerequisites for optimal AI deployment. However, many developing regions face infrastructural challenges, hindering the seamless integration of AI technologies. Insufficient connectivity and inadequate power supply can impede the real-time processing demands of AI applications, creating a digital divide between regions with and without adequate infrastructure.[15]

Challenges regarding Skill Gap-
The effective use of Al-driven tools requires a workforce equipped with the necessary skills and knowledge. However, there is often a significant skill gap in developing countries, where education systems may not provide sufficient training in digital literacy and technical competencies. This gap hinders not only the operation and maintenance of Al systems but also the ability of the population to engage with Al-driven services effectively. To overcome this barrier, it is crucial to integrate digital skills training into educational curricula and provide ongoing learning opportunities for adults and professionals .

Global Divergence in Regulatory Approaches:
With various generative AI technologies progressing at record speed, governments worldwide are crafting regulatory structures tailored to their unique economic, technological, and societal contexts. A comparative analysis between Global North countries (U.S., EU, UK, Canada, Japan, Australia) and Global South nations (India, China, Brazil, African states, ASEAN members) reveals striking differences in regulatory philosophies, implementation timelines, and underlying motivations.

The Global North generally adopts a risk-mitigation approach, emphasizing data privacy, algorithmic accountability, and consumer protection. These countries leverage their advanced digital infrastructure and mature legal systems to implement structured frameworks, such as the EU AI Act or Canada's Digital Charter. In contrast, the Global South often prioritizes development goals, digital inclusion, and economic empowerment. Here, regulatory frameworks are still evolving, often comprising a blend of soft law (guidelines, ethical charters) and emerging hard law initiatives.

Addressing the disparities in AI representation, access, and infrastructure between these regions is vital for achieving equitable global governance. Without coordinated international frameworks and cross-border cooperation, the digital divide could deepen, entrenching systemic inequalities in access to justice and technological innovation. Legal harmonization, inclusive policy dialogues, and capacity-building programs are essential to foster a globally balanced and rights-based AI ecosystem.

[15] ITU, 2018, https://www.langedutech.com/letjournal/index.php/let/issue/view/6

Gaps in Policy Implementation and Governance-

One of the fundamental impediments to bridging the digital divide in India lies in the inadequacies of policy formulation and governance. Despite the recognized constitutional mandate to ensure equitable access to resources and opportunities, the current policy landscape lacks a coherent and enforceable framework to facilitate inclusive digital development.[16]

The principal challenge arises from the absence of a comprehensive national strategy that integrates digital infrastructure expansion with socio-economic inclusion. Policies tend to be fragmented, with limited coordination between central and state governments, thereby resulting in uneven implementation and resource allocation.[17]

This is particularly evident in rural and underdeveloped regions, where digital connectivity, accessibility to devices, and skill development programs remain insufficient or entirely absent.[18]

Furthermore, policymaking processes have largely excluded the representation of marginalized and vulnerable populations, including but not limited to women, linguistic minorities, persons with disabilities, and economically weaker sections. This omission contravenes the principle of substantive equality as enshrined under Articles 14 and 15 of the Constitution of India, thereby reinforcing existing structural inequalities in digital access.[19]

The rapid proliferation of AI technologies has profound implications for socio-economic development across the globe. However, in developing nations, AI adoption is constrained by substantial structural impediments, including inadequate infrastructure, skill deficiencies, fragmented policy frameworks, financial constraints, and ethical concerns. To address these challenges, a multidimensional strategic approach is required, ensuring that AI benefits are distributed equitably. One of the primary barriers to AI implementation in developing countries is the deficiency of essential infrastructure. These include unreliable power supplies, limited broadband penetration, and insufficient access to computational hardware. AI technologies necessitate stable and high-speed internet connectivity alongside continuous electrical supply to function effectively. Consequently, investment in digital and telecommunications infrastructure is critical. Governmental authorities, in collaboration with private entities and international organizations, must prioritize the expansion of broadband networks and the enhancement of energy grids to facilitate AI deployment.

A substantial skill gap impedes AI accessibility in many developing regions. Educational institutions often lack structured curricula for digital literacy and AI competency development, restricting the ability of populations to engage meaningfully with AI-driven solutions.

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[16] Telecom Regulatory Auth. of India, Consultation Paper on Digital Inclusion in the Era of Emerging Technologies(2024),https://trai.gov.in/sites/default/files/2024-11/NICI_23012024.pdf

[17] Bridging the Digital Divide in India: Challenges, Impact, and Solutions, U.P. PCS Magazine,https://uppcsmagazine.com/bridging-the-digital-divide-in-india-challenges-impact-and-solutions/

[18] Navigating the Digital Divide in India: A Comprehensive Guide, Human. & Soc. Sci.Rev.https://mgesjournals.com/hssr/article/download/5993/3876/17381.

[19] Bridging the Digital Divide in India: Strategies and Challenges in the Digital Era, Int'l J. Creative Res.Thoughts,https://ijcrt.org/papers/IJCRTAU02018.pdf

Comprehensive AI literacy programs should be embedded within formal educational systems, supplemented by professional training initiatives that enable continuous skill enhancement among the workforce. Furthermore, targeted educational interventions must be designed to address disparities in access, particularly among marginalized communities[20]. Additionally, legislative safeguards pertaining to data privacy, cybersecurity, and algorithmic accountability must be instituted to mitigate risks associated with AI adoption. Governments must ensure inclusive policymaking that incorporates the perspectives of diverse populations, including women, linguistic minorities, persons with disabilities, and economically disadvantaged groups.

AI innovation requires substantial financial investment. Developing nations frequently encounter budgetary limitations in supporting AI-driven initiatives. Public funding, international development aid, and private-sector engagement play pivotal roles in sustaining AI research and infrastructure expansion. The establishment of a global AI funding mechanism, such as the initiative proposed by the United Nations, can facilitate access to AI resources and training programs for underdeveloped regions. Governments must foster favorable economic policies to incentivize private investment in AI.

Conclusion and Recommendations

AI and automation present a historic opportunity to enhance the effectiveness, reach, and equity of Alternative Dispute Resolution systems while bridging the digital divide. However, this transformation demands robust legal foresight, ethical sensitivity, and inclusive infrastructure. By implementing well-balanced policies and technological safeguards, AI can contribute to a fairer, faster, and more inclusive justice system that advances sustainable socio-economic development on a global scale. Thus, leveraging AI and automation to bridge the digital divide in developing nations presents both transformative opportunities and critical challenges. AI-driven solutions have the potential to enhance digital inclusivity, improve financial accessibility, and streamline essential services, particularly for marginalized communities. However, achieving equitable AI integration requires a extensive legal and policy framework that addresses infrastructural limitations, regulatory inconsistencies, algorithmic biases, and cybersecurity risks. Governments must implement comprehensive AI governance mechanisms, ensuring transparency, accountability, and ethical standards in automated systems. Strengthening data protection laws, expanding digital literacy programs, and fostering international collaboration are essential components of a sustainable AI strategy. Moreover, policymakers must prioritize inclusivity by designing AI models that cater to diverse linguistic, cultural, and socio-economic contexts. A balanced approach one that embraces innovation while safeguarding human rights and digital equity will be pivotal in harnessing AI as a catalyst for socio-economic development. Through collaborative efforts involving governments, private sector stakeholders, and civil society, developing nations can unlock AI's potential to create a more just and technologically empowered society.

[20] John Doe, Bridging AI Literacy Skill Sets Gap: A Critical Priority Now and..., 26 NIJSES 6116 (2025)

There were few recommendations as following: To promote inclusive AI development with culturally diverse datasets and ethical design protocols. Develop a legal framework for ADR-focused AI systems emphasizing privacy, fairness, and procedural integrity. Introduce compulsory licensing regimes for AI training materials, ensuring innovation without undermining IP rights. Invest in digital infrastructure, regional language models, and AI literacy initiatives. Create an interdisciplinary legal-tech ecosystem involving academia, industry, judiciary, and civil society.