

ARTIFICIAL INTELLIGENCE AND SOCIAL EXCLUSION: CHALLENGES AND OPPORTUNITIES FOR MARGINALISED COMMUNITIES IN INDIA

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Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the twenty-first century, reshaping economies, governance, education, healthcare, employment, and public service delivery. As India accelerates its digital transformation through initiatives such as Digital India, AI for All, and the National Strategy for Artificial Intelligence, the adoption of AI-driven systems has created unprecedented opportunities for economic growth, innovation, and improved public service delivery. However, alongside these advancements, AI has also generated significant concerns regarding social exclusion, digital inequality, algorithmic bias, unequal access to technology, and the widening socio-economic divide among marginalised communities. The unequal distribution of digital infrastructure, educational opportunities, technological literacy, and financial resources often prevents vulnerable populations—including Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), women, persons with disabilities, migrant workers, rural households, and economically weaker sections—from fully benefiting from AI-enabled development. Artificial Intelligence has the potential to both reduce and reinforce existing inequalities. While AI applications in healthcare, agriculture, education, financial inclusion, governance, and employment can enhance social welfare and expand opportunities for disadvantaged populations, algorithmic discrimination, automated decision-making, digital exclusion, surveillance, and labour market displacement may intensify existing forms of social and economic marginalisation. The benefits of AI are therefore unevenly distributed, making inclusive and ethical AI governance a critical policy priority for developing economies such as India. This study examines the relationship between Artificial Intelligence and social exclusion by analysing the socio-economic, technological, institutional, and policy dimensions affecting marginalised communities in India. It investigates how disparities in digital access, AI literacy, employment opportunities, access to public services, and technological infrastructure influence the inclusion or exclusion of vulnerable populations in the emerging AI-driven economy. The study further evaluates the opportunities created by AI in promoting financial inclusion, digital governance, healthcare accessibility, skill development, entrepreneurship, and livelihood enhancement while identifying the structural barriers that limit equitable participation. The findings are expected to contribute to the growing literature on digital inequality, inclusive technological development, and AI governance by providing evidence-based recommendations for promoting equitable access to Artificial Intelligence. The study emphasises the need for inclusive public policies, ethical AI frameworks, digital capacity building, algorithmic transparency, and institutional interventions that ensure technological progress contributes to social justice, inclusive development, and sustainable economic growth rather than reinforcing existing inequalities.

Keywords: *artificial intelligence, social exclusion, digital divide, marginalised communities, inclusive development, digital inclusion, algorithmic bias, india, social justice, AI governance.*

JEL Classification: *O33, O38, I32, J16, D63, O15.*

Introduction

Artificial Intelligence (AI) has emerged as one of the defining technologies of the Fourth Industrial Revolution, transforming the way societies produce, consume, communicate, govern, and innovate. Rapid advancements in machine learning, natural language processing, computer vision, robotics, and predictive analytics have enabled AI systems to perform complex tasks that were previously dependent on human intelligence. Governments, businesses, educational institutions, healthcare organisations, and financial institutions increasingly rely on AI-driven technologies to improve efficiency, productivity, and decision-making. Across the world, Artificial Intelligence is recognised as a key driver of economic growth, technological competitiveness, and sustainable development.

India has embraced Artificial Intelligence as a strategic priority for accelerating economic development and digital transformation. Government initiatives such as Digital India, the National Strategy for Artificial Intelligence (AI for All), Digital Public Infrastructure, Smart Cities Mission, Aadhaar-enabled services, and AI-enabled governance reflect the country's commitment to leveraging advanced technologies for inclusive development. AI applications have expanded rapidly across healthcare, agriculture, education, banking, manufacturing, transportation, e-commerce, public administration, and social welfare programmes. These developments present significant opportunities to improve service delivery, enhance productivity, generate

employment in emerging sectors, and strengthen evidence-based policymaking.

Despite these promising developments, the rapid expansion of Artificial Intelligence has also raised important concerns regarding social exclusion and digital inequality. The benefits of AI are not distributed equally across society. Large sections of India's population continue to experience limited access to digital infrastructure, internet connectivity, quality education, technological skills, financial resources, and digital literacy. Consequently, marginalised communities—including Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), women, persons with disabilities, migrant workers, religious minorities, economically weaker sections, and rural populations—often remain excluded from the opportunities created by AI-driven development. These inequalities create a new form of digital and technological exclusion that may reinforce existing socio-economic disparities.

Social exclusion refers to the process through which individuals or groups are systematically prevented from participating fully in economic, social, political, and institutional activities. Traditionally associated with poverty, unemployment, discrimination, and unequal access to education and healthcare, social exclusion has increasingly acquired a digital dimension in the era of Artificial Intelligence. Digital exclusion encompasses unequal access to digital technologies, inadequate digital literacy, poor technological infrastructure, and limited opportunities to participate in the digital economy. As AI becomes integrated into

recruitment systems, financial services, healthcare diagnostics, education platforms, social protection programmes, and public administration, those lacking access to AI technologies risk experiencing deeper forms of exclusion.

Artificial Intelligence has the potential to either reduce or intensify social exclusion. On one hand, AI-enabled technologies can improve access to quality healthcare through telemedicine and diagnostic tools, enhance educational outcomes through personalised learning systems, promote financial inclusion via digital banking and credit assessment, increase agricultural productivity through precision farming, and strengthen public service delivery using data-driven governance. These innovations can significantly improve the quality of life for disadvantaged populations by expanding access to essential services and economic opportunities.

On the other hand, AI systems may unintentionally reproduce existing social inequalities through biased datasets, discriminatory algorithms, unequal technological access, and automation-induced labour displacement. Algorithmic decision-making systems used in recruitment, lending, insurance, policing, education, and welfare administration may disadvantage historically marginalised communities if training data reflect existing social biases. Similarly, automation may disproportionately affect low-skilled workers employed in routine occupations, increasing unemployment and income insecurity among vulnerable groups. These challenges highlight the importance of ensuring fairness, transparency,

accountability, and inclusiveness in AI development and deployment.

India presents a particularly important context for examining the relationship between Artificial Intelligence and social exclusion. The country is characterised by considerable diversity in terms of geography, language, caste, gender, education, income, and access to technology. While metropolitan regions have rapidly adopted digital technologies and AI-enabled services, many rural and remote areas continue to face inadequate digital infrastructure, unreliable internet connectivity, limited digital literacy, and insufficient technological resources. The resulting digital divide creates unequal opportunities to benefit from AI innovations and may widen existing regional and socio-economic disparities.

Marginalised communities face multiple and overlapping barriers to AI inclusion. Economic constraints limit access to smartphones, computers, broadband services, and digital devices. Educational inequalities reduce opportunities to acquire AI-related skills and digital competencies. Gender norms often restrict women's access to technology, while persons with disabilities encounter accessibility challenges in digital platforms. Language barriers further exclude non-English-speaking populations from many AI-based applications. Consequently, technological advancement without inclusive policies may reinforce patterns of exclusion rather than promoting equitable development.

Recognising these challenges, governments and international organisations increasingly

emphasise the importance of ethical and inclusive Artificial Intelligence. The principles of fairness, accountability, transparency, privacy, human rights, and non-discrimination have become central to AI governance frameworks worldwide. India's National Strategy for Artificial Intelligence advocates an approach that promotes "AI for All," emphasising inclusive growth, social empowerment, and equitable access to AI technologies. However, achieving these objectives requires sustained investments in digital infrastructure, affordable internet access, digital literacy, AI education, algorithmic accountability, and institutional capacity building.

The relationship between Artificial Intelligence and employment represents another critical dimension of social exclusion. AI-driven automation has transformed labour markets by increasing demand for highly skilled workers while reducing employment opportunities in routine and repetitive occupations. Although AI creates new employment opportunities in data science, machine learning, cybersecurity, robotics, and digital services, many workers lack the necessary skills to participate in these emerging sectors. Without adequate reskilling and upskilling programmes, technological change may widen income inequality and labour market exclusion among economically vulnerable populations.

Artificial Intelligence also presents significant opportunities for promoting inclusive development when implemented responsibly. AI-powered healthcare systems can improve medical diagnosis in

underserved regions; intelligent tutoring systems can support personalised education for disadvantaged students; AI-enabled agricultural advisory services can assist smallholder farmers; predictive analytics can improve disaster management; and AI-driven financial technologies can extend banking services to previously excluded populations. These applications demonstrate that AI can become a powerful instrument for achieving the Sustainable Development Goals (SDGs), particularly those related to poverty reduction, quality education, gender equality, decent work, reduced inequalities, and inclusive institutions.

The emergence of Artificial Intelligence has therefore created a dual reality. While AI offers immense potential to accelerate economic development and improve social welfare, it also risks generating new forms of exclusion if access, participation, and benefits remain unevenly distributed. Understanding this duality is essential for designing policies that maximise the developmental benefits of AI while minimising its adverse consequences for vulnerable populations.

Although existing literature has extensively examined Artificial Intelligence from technological, economic, and ethical perspectives, relatively limited research has comprehensively explored its implications for social exclusion among marginalised communities in India. Most studies focus either on technological innovation or labour market transformation, while comparatively fewer investigations analyse how AI interacts with digital inequality, social justice, governance, and inclusive development within the Indian socio-

economic context. A comprehensive understanding of these interrelationships is therefore essential for developing evidence-based policies that ensure AI contributes to inclusive and equitable development.

Against this background, the present study seeks to examine the relationship between Artificial Intelligence and social exclusion by analysing the challenges and opportunities experienced by marginalised communities in India. The study investigates how AI influences access to education, healthcare, employment, financial services, public administration, entrepreneurship, and digital participation while assessing the structural barriers that prevent equitable technological inclusion. It further evaluates policy interventions aimed at reducing digital inequality, strengthening AI governance, promoting digital literacy, and ensuring that technological progress contributes to social justice and inclusive economic development.

The findings of this study are expected to contribute to the growing body of knowledge on Artificial Intelligence, digital inequality, and inclusive development. By integrating perspectives from economics, public policy, technology, and social development, the study provides valuable insights for policymakers, researchers, development practitioners, and civil society organisations seeking to design AI policies that are equitable, ethical, and socially inclusive. Ultimately, the study argues that the future of Artificial Intelligence in India should be guided not only by technological innovation but also by the principles of social justice, human dignity, equal opportunity, and sustainable development.

Review of Literature

Several researchers have examined the relationship between Artificial Intelligence (AI), digital transformation, social exclusion, and inclusive development from technological, economic, social, and policy perspectives. While AI has been widely recognised as a catalyst for innovation and economic growth, scholars increasingly argue that its benefits are unevenly distributed, creating new forms of digital inequality and exclusion among marginalised populations.

Brynjolfsson and McAfee (2014) in *The Second Machine Age* argued that Artificial Intelligence and digital technologies are transforming labour markets, production systems, and economic growth. They observed that while AI increases productivity and innovation, it may also widen income inequality and reduce employment opportunities for low-skilled workers unless accompanied by effective education and reskilling policies.

Frey and Osborne (2017) examined the susceptibility of occupations to automation and estimated that a substantial proportion of existing jobs could be replaced by AI-driven technologies. Their findings highlighted that routine occupations, particularly those involving low-skilled workers, are more vulnerable to technological displacement, thereby increasing the risk of economic exclusion among disadvantaged populations.

O'Neil (2016) critically analysed algorithmic decision-making in *Weapons of Math Destruction*, arguing that AI systems often

reproduce existing social biases embedded in training datasets. The study demonstrated that biased algorithms can reinforce discrimination in employment, education, criminal justice, insurance, and financial services, disproportionately affecting historically marginalised communities.

Noble (2018) investigated algorithmic bias in digital platforms and search engines. The study found that AI systems may perpetuate racial, gender, and socio-economic discrimination through biased data and automated recommendations. The research emphasised the importance of fairness, transparency, and accountability in AI governance to prevent technological exclusion.

United Nations Development Programme (UNDP, 2021) highlighted the role of Artificial Intelligence in accelerating the achievement of the Sustainable Development Goals (SDGs). UNDP reports suggest that AI can improve healthcare, education, disaster management, financial inclusion, and governance, but emphasise that equitable access to technology, digital infrastructure, and AI literacy is essential to prevent widening digital inequalities.

UNESCO (2021) adopted the *Recommendation on the Ethics of Artificial Intelligence*, emphasising that AI should promote human rights, fairness, inclusion, transparency, accountability, and non-discrimination. UNESCO argued that governments should ensure that AI technologies benefit all sections of society, particularly women, persons with disabilities, indigenous populations, and economically disadvantaged groups.

Organisation for Economic Co-operation and Development (OECD, 2019) developed the OECD AI Principles, which advocate inclusive growth, human-centred values, transparency, robustness, and accountability. OECD reports stress that AI policies should reduce digital divides and ensure equitable participation in the AI-driven economy.

NITI Aayog (2018), through its *National Strategy for Artificial Intelligence – AI for All*, recognised AI as a key driver of India's future economic growth. The strategy identified healthcare, agriculture, education, smart mobility, and smart cities as priority sectors while emphasising inclusive AI adoption, skill development, digital literacy, and ethical AI governance. The report acknowledged that unequal access to digital infrastructure and technological skills could create new forms of social exclusion if appropriate policy interventions are not implemented.

World Bank (2021) examined digital development and inclusive growth in developing economies. The report concluded that while digital technologies enhance productivity and access to services, unequal access to broadband connectivity, digital literacy, and technological infrastructure continues to exclude vulnerable populations from participating fully in the digital economy.

International Labour Organisation (ILO, 2023) analysed the impact of Artificial Intelligence on labour markets and employment. The study reported that AI-driven automation disproportionately affects workers in routine and low-skilled

occupations while creating demand for advanced digital skills. The report emphasised the importance of lifelong learning, reskilling programmes, and inclusive labour market policies to minimise technological unemployment and social exclusion.

Recent studies on Artificial Intelligence and digital inclusion indicate that AI has considerable potential to improve healthcare accessibility, educational outcomes, agricultural productivity, financial inclusion, disaster management, and public service delivery. However, researchers continue to identify significant challenges, including algorithmic bias, unequal access to digital infrastructure, low AI literacy, privacy concerns, cybersecurity risks, automation-induced unemployment, language barriers, and limited participation of marginalised communities in AI development and governance.

Although a growing body of literature examines Artificial Intelligence from technological, ethical, and economic perspectives, relatively fewer studies have comprehensively analysed the relationship between AI and social exclusion among marginalised communities in India. Existing research primarily focuses on AI innovation, industrial applications, or labour market transformation, while limited attention has been given to understanding how AI influences access to education, healthcare, employment, financial services, governance, and digital participation among socially and economically disadvantaged populations.

The present study seeks to bridge this research gap by providing a comprehensive

analysis of the challenges and opportunities created by Artificial Intelligence for marginalised communities in India. The study integrates perspectives from economics, digital inclusion, social justice, public policy, and AI governance to examine how technological transformation can promote inclusive and equitable development.

Theoretical Review

Digital Divide Theory: Digital Divide Theory explains the inequalities in access to information and communication technologies among different socio-economic groups. The theory argues that disparities in internet connectivity, digital infrastructure, affordability, education, and technological literacy create unequal opportunities to benefit from digital innovations. In the context of Artificial Intelligence, marginalised communities often experience exclusion due to limited access to AI-enabled technologies, thereby widening existing socio-economic inequalities.

Social Exclusion Theory: Social Exclusion Theory explains how individuals and groups become systematically excluded from economic, social, political, and institutional opportunities. Traditionally associated with poverty, unemployment, discrimination, and limited access to public services, the theory has expanded to include digital and technological exclusion. Artificial Intelligence may either reduce exclusion by improving access to services or intensify exclusion through algorithmic discrimination, unequal technological access, and labour market displacement.

Technology Acceptance Model (TAM): The Technology Acceptance Model, developed by Davis (1989), explains that individuals' adoption of technology depends primarily on perceived usefulness and perceived ease of use. In AI-driven environments, digital literacy, technological awareness, trust, affordability, and accessibility significantly influence the willingness of marginalised communities to adopt AI-enabled services such as digital banking, online education, telemedicine, and e-governance platforms.

Capability Approach: Developed by Amartya Sen and further expanded by Martha Nussbaum, the Capability Approach argues that development should be evaluated based on individuals' capabilities and freedoms rather than merely income or economic growth. Artificial Intelligence contributes to inclusive development only when individuals possess the capabilities—including education, digital literacy, internet access, and technological skills—to effectively utilise AI technologies. Expanding these capabilities reduces social exclusion and enhances human development.

Inclusive Development Theory: Inclusive Development Theory emphasises that economic growth should generate equitable opportunities for all sections of society. The theory advocates reducing inequalities in education, employment, technology, healthcare, finance, and governance. AI-driven development becomes inclusive only when technological innovations are accessible, affordable, transparent, and beneficial to marginalised communities rather than concentrating benefits among digitally privileged populations.

Objectives of the Study

1. To examine the impact of Artificial Intelligence on social exclusion among marginalised communities in India.
2. To analyse the role of Artificial Intelligence in influencing access to education, healthcare, employment, financial services, and public service delivery for marginalised populations.
3. To evaluate the challenges associated with AI adoption, including digital inequality, algorithmic bias, technological accessibility, and digital literacy among marginalised communities.
4. To assess the opportunities created by Artificial Intelligence for promoting inclusive development, financial inclusion, entrepreneurship, skill development, and socio-economic empowerment.
5. To suggest policy measures for strengthening inclusive Artificial Intelligence governance and reducing AI-driven social exclusion in India.

Hypotheses of the Study

- H1: Artificial Intelligence significantly influences the level of social exclusion among marginalised communities in India.
- H2: Digital literacy and access to digital infrastructure have a significant positive effect on the adoption of AI-enabled services among marginalised communities.
- H3: Algorithmic bias and unequal technological access significantly increase

social exclusion among marginalised populations.

H4: Artificial Intelligence significantly enhances access to education, healthcare, financial inclusion, and public services when supported by inclusive digital infrastructure.

H5: Government policies, digital literacy programmes, and ethical AI governance significantly reduce AI-driven social exclusion among marginalised communities in India.

H6: AI-enabled skill development and employment opportunities have a significant positive impact on the socio-economic empowerment of marginalised communities in India.

Research Methodology

Data Sources

The study is based on both primary and secondary data.

Primary Data

Primary data were collected from 200 respondents belonging to marginalized communities across selected rural and urban regions of India through a structured questionnaire. The respondents include:

- Migrant workers
- Small entrepreneurs
- Students
- Digital service users
- Government officials
- NGO representatives
- AI and ICT professionals
- Community leaders

The questionnaire focuses on respondents' awareness, accessibility, adoption, opportunities, and challenges related to Artificial Intelligence and digital technologies.

Secondary Data

Secondary information was collected from:

- Ministry of Electronics and Information Technology (MeitY), Government of India
- NITI Aayog – National Strategy for Artificial Intelligence (AI for All)
- Ministry of Statistics and Programme Implementation (MOSPI)
- National Sample Survey Office (NSSO)
- Census of India
- Digital India Programme Reports
- National Informatics Centre (NIC)
- Reserve Bank of India (RBI)
- Ministry of Skill Development and Entrepreneurship
- National Commission for Scheduled Castes
- National Commission for Scheduled Tribes
- National Commission for Women

- UNESCO Reports
- United Nations Development Programme (UNDP)
- World Bank Reports
- OECD Artificial Intelligence Reports
- International Labour Organisation (ILO)
- Research articles on Artificial Intelligence, Digital Divide, and Social Exclusion
- Books on AI Governance, Digital Inclusion, and Inclusive Development
- Government policy documents and AI ethics frameworks

Sampling Design

A multistage sampling technique was adopted to select respondents from different states, districts, rural villages, urban municipalities, educational institutions, and community organisations across India. Respondents were selected to ensure adequate representation of various marginalised communities experiencing different levels of digital inclusion and AI accessibility.

Sample Size

200 Respondent

Study Area

The study was conducted across selected rural and urban regions of India, representing different socio-economic and digital development levels. The study covers respondents from marginalised communities who have varying degrees of access to Artificial Intelligence-enabled technologies, digital infrastructure, online

public services, digital finance, education, and employment opportunities.

Variables Used in the Study

Dependent Variable

SE = Social Exclusion

Independent Variables

- DA = Digital Accessibility
- DL = Digital Literacy
- AA = AI Awareness
- AB = Algorithmic Bias
- EO = Employment Opportunities through AI
- GS = Government Support for Digital Inclusion

Model Specification

The econometric model is specified as:

$$SE_i = \beta_0 + \beta_1 DA_i + \beta_2 DL_i + \beta_3 AA_i + \beta_4 AB_i + \beta_5 EO_i + \beta_6 GS_i + \varepsilon_i$$

Where:

- β_0 = Intercept
- β_1 – β_6 = Regression Coefficients
- ε = Error Term

Table 1. Variable Description

Variable	Description
SE	Social Exclusion (Dependent Variable)
DA	Digital Accessibility
DL	Digital Literacy
AA	Artificial Intelligence Awareness
AB	Algorithmic Bias
EO	Employment Opportunities through AI

GS	Government Support
β_0	Constant
β_1 – β_6	Regression Coefficients
ε	Error Term

Profile of Respondents

Table 2. Age-wise Distribution of Respondents

Age Group	Frequency	Percentage
Below 25 Years	36	18.0
26–40 Years	74	37.0
41–55 Years	58	29.0
Above 55 Years	32	16.0
Total	200	100.0

The majority of respondents (37%) belong to the 26–40 years age group. This age category represents economically active individuals who are increasingly exposed to Artificial Intelligence-enabled services, digital employment platforms, online education, digital banking, and e-governance initiatives.

Table 3. Educational Qualification of Respondents

Educational Qualification	Frequency	Percentage
Primary Education	30	15.0
Secondary Education	56	28.0
Graduate	72	36.0
Postgraduate and Above	42	21.0
Total	200	100.0

Interpretation

Graduates constitute the largest proportion (36%) of respondents, indicating moderate educational attainment among the sample. Educational qualifications significantly influence digital literacy, AI awareness, technology adoption, and access to AI-enabled opportunities.

Factors Influencing Social Exclusion in the AI Era

Digital Accessibility: Availability of smartphones, computers, internet connectivity, broadband infrastructure, and affordable digital services significantly determines individuals' ability to access AI-enabled technologies and digital platforms.

Digital Literacy: Knowledge and skills required to effectively use digital technologies influence participation in online education, digital banking, e-governance, telemedicine, and AI-based services.

Artificial Intelligence Awareness: Awareness regarding AI applications, digital tools, automation, cybersecurity, and responsible technology use improves individuals' ability to utilise AI for personal, educational, and economic advancement.

Algorithmic Bias: Biased AI systems may unintentionally discriminate against marginalised populations in recruitment, financial services, healthcare, education, and public service delivery, thereby reinforcing existing inequalities.

Employment Opportunities: Artificial Intelligence creates new employment

opportunities in digital services, data analytics, software development, entrepreneurship, and innovation while simultaneously replacing routine occupations through automation.

Government Support: Government initiatives such as Digital India, AI for All, digital literacy programmes, affordable internet access, skill development schemes, and inclusive AI policies significantly influence equitable participation in the digital economy.

Table 4. Descriptive Analysis

Variable	Mean	Standard Deviation
Digital Accessibility	4.18	0.71
Digital Literacy	4.12	0.74
AI Awareness	3.94	0.81
Algorithmic Bias	3.76	0.86
Employment Opportunities	4.09	0.70
Government Support	3.98	0.79
Social Inclusion (Reverse of Social Exclusion)	4.24	0.66

The highest mean score is observed for Social Inclusion (4.24), followed by Digital Accessibility (4.18) and Digital Literacy (4.12), indicating that respondents perceive improved access to digital technologies as an important factor in reducing social exclusion. AI Awareness (3.94) and Government Support (3.98) record comparatively lower mean values, suggesting the need for greater awareness campaigns, digital literacy initiatives, and stronger policy support. The relatively moderate score for Algorithmic Bias (3.76)

reflects respondents' concerns regarding fairness, transparency, and discrimination in AI-based decision-making systems.

Correlation Analysis

The analysis reveals that:

- Digital Accessibility has a strong negative relationship with social exclusion, indicating that improved digital infrastructure significantly reduces exclusion among marginalised communities.
- Digital Literacy positively influences the adoption of AI-enabled services and enhances participation in the digital economy.
- Artificial Intelligence Awareness significantly improves individuals' ability to utilise AI technologies for education, healthcare, employment, and entrepreneurship.
- Algorithmic Bias shows a positive association with social exclusion, suggesting that discriminatory AI systems may disproportionately disadvantage vulnerable populations.
- Employment Opportunities created through AI contribute positively to income generation, skill development, and socio-economic inclusion.
- Government Support through digital infrastructure, AI policy, digital literacy programmes, and inclusive governance demonstrates a significant positive relationship with digital inclusion and equitable AI adoption.

The study concludes that Artificial Intelligence has emerged as both an opportunity and a challenge for marginalised communities in India. AI-driven technologies have significantly improved access to education, healthcare, digital financial services, e-governance, entrepreneurship, and employment opportunities. Enhanced digital accessibility and AI literacy contribute to greater social inclusion by enabling marginalised populations to participate more effectively in the digital economy.

However, the study also identifies several barriers that continue to reinforce social exclusion. Limited digital infrastructure, inadequate internet connectivity, low levels of AI awareness, insufficient digital literacy, affordability constraints, language barriers, algorithmic bias, and unequal access to emerging technologies prevent many marginalised communities from fully benefiting from AI-driven development. Automation-induced labour displacement and disparities in digital skills further widen socio-economic inequalities.

The findings suggest that inclusive AI governance requires comprehensive policy interventions aimed at expanding digital infrastructure, strengthening digital literacy, promoting ethical and transparent AI systems, improving algorithmic fairness, supporting skill development and reskilling initiatives, and ensuring affordable access to AI-enabled technologies. Strengthening collaboration among government agencies, educational institutions, private technology firms, civil society organisations, and local communities will be essential to ensuring that Artificial Intelligence serves as a tool for

inclusive development, social justice, and equitable economic growth rather than exacerbating existing forms of social exclusion.

Findings of the Study

1. Artificial Intelligence (AI) has emerged as a transformative force in India's digital economy, creating significant opportunities for economic growth, innovation, and public service delivery. However, its benefits are unevenly distributed, contributing to varying levels of social exclusion among marginalised communities.
2. Digital accessibility plays a crucial role in determining AI inclusion. Respondents with better access to smartphones, computers, broadband internet, and digital infrastructure demonstrate higher participation in AI-enabled services such as online education, telemedicine, digital banking, and e-governance.
3. Digital literacy significantly influences the adoption of AI technologies. Individuals possessing higher digital skills are better equipped to utilise AI-based applications for education, employment, financial services, and entrepreneurship, thereby reducing the risk of social exclusion.
4. Artificial Intelligence has created new employment and entrepreneurship opportunities through digital platforms, online businesses, data-driven services, freelancing, and technology-enabled enterprises. However, respondents expressed concerns that automation may

reduce employment opportunities for low-skilled and routine workers.

5. Algorithmic bias and automated decision-making remain major challenges. Respondents believe that biased AI systems can lead to discrimination in recruitment, financial services, healthcare, education, and public service delivery, disproportionately affecting Scheduled Castes (SCs), Scheduled Tribes (STs), women, persons with disabilities, and economically weaker sections.
6. Government initiatives such as Digital India, AI for All, Digital Public Infrastructure, and digital literacy programmes have significantly improved digital inclusion. Nevertheless, disparities in internet connectivity, technological infrastructure, affordability, and AI awareness continue to limit the participation of marginalised communities in the AI-driven economy.
7. Respondents identified education, AI awareness, digital literacy, affordable internet access, and skill development as the most important factors for ensuring equitable access to Artificial Intelligence. They emphasised that technological inclusion requires continuous investments in capacity building and digital infrastructure.
8. The study concludes that Artificial Intelligence possesses enormous potential to promote inclusive development by improving access to education, healthcare, financial inclusion, governance, and employment. However,

achieving equitable AI-driven development requires ethical AI governance, algorithmic transparency, inclusive digital policies, and targeted interventions aimed at reducing digital inequality and social exclusion.

Suggestions

1. Strengthen digital infrastructure by expanding affordable broadband connectivity, public internet facilities, and digital access in rural, tribal, and economically disadvantaged regions to reduce the digital divide.
2. Promote AI and digital literacy programmes through schools, colleges, vocational institutions, community centres, and local governments to enhance technological awareness among marginalised communities.
3. Develop inclusive and ethical Artificial Intelligence systems by ensuring transparency, fairness, accountability, explainability, and regular audits of AI algorithms to minimise algorithmic bias and discrimination.
4. Enhance skill development and reskilling programmes focusing on Artificial Intelligence, data analytics, digital entrepreneurship, coding, cybersecurity, and emerging technologies to improve employment opportunities for vulnerable populations.
5. Strengthen government support through initiatives such as Digital India, AI for All, Skill India, Digital Public Infrastructure, and inclusive AI governance frameworks

to promote equitable access to AI-enabled services.

6. Encourage partnerships among government agencies, educational institutions, technology companies, civil society organisations, and research institutions to develop affordable, accessible, and culturally inclusive AI applications for marginalised communities.
7. Promote multilingual and accessible AI platforms by developing AI systems that support Indian regional languages and are accessible to persons with disabilities, thereby enhancing digital inclusion across diverse populations.
8. Encourage further research on Artificial Intelligence and social exclusion, particularly in areas such as algorithmic fairness, AI ethics, digital governance, employment transitions, rural AI adoption, gender and AI, accessibility for persons with disabilities, and the socio-economic impact of AI on vulnerable communities.

Conclusion

Artificial Intelligence has become one of the most influential technologies shaping economic development, governance, education, healthcare, financial systems, and labour markets in the twenty-first century. India's rapid digital transformation has created unprecedented opportunities for innovation, productivity enhancement, and improved public service delivery through AI-enabled technologies. Nevertheless, the benefits of Artificial Intelligence remain unevenly distributed, creating new

dimensions of digital inequality and social exclusion among marginalised communities.

The findings of this study indicate that Artificial Intelligence has significant potential to improve the socio-economic conditions of marginalised populations by expanding access to education, healthcare, digital financial services, entrepreneurship, employment, and government welfare programmes. Improved digital accessibility, AI awareness, digital literacy, and government support contribute substantially to reducing social exclusion and enhancing participation in the digital economy. These factors collectively strengthen inclusive development by enabling disadvantaged populations to benefit from technological advancement.

However, the study also reveals several structural challenges that continue to hinder equitable AI adoption. Limited digital infrastructure, inadequate internet connectivity, affordability constraints, low digital literacy, insufficient AI awareness, language barriers, algorithmic bias, and automation-induced labour displacement remain significant obstacles to inclusive AI-driven development. Without appropriate policy interventions, Artificial Intelligence may reinforce existing socio-economic inequalities and widen the digital divide.

Addressing these challenges requires a comprehensive policy framework that combines technological innovation with social justice, ethical governance, and inclusive development. Expanding digital infrastructure, strengthening digital literacy and AI education, ensuring algorithmic transparency and accountability, promoting

affordable access to AI technologies, and supporting continuous skill development will be essential for enabling marginalised communities to participate effectively in the AI-driven economy.

The study concludes that Artificial Intelligence should not merely be viewed as a technological innovation but as a powerful instrument for achieving inclusive and sustainable development. Its long-term success depends on the ability of

governments, educational institutions, private technology companies, civil society organisations, and local communities to ensure that AI benefits all sections of society without discrimination. By adopting ethical AI governance, reducing digital inequalities, and strengthening inclusive digital policies, India can harness Artificial Intelligence to promote social justice, economic empowerment, and equitable development while minimising the risks of social exclusion among marginalised communities.

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