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AI For Poverty Alleviation: A Critical Analysis Of Government Welfare Programmes With Special Reference To India

Name of Author (1): Vidya Gosavi Name of Author (2): Dr. Amol Gaikwad

Designation of 1st Author: Ph.D. Researcher

Designation of 2nd Author: Ph.D. Research Guide

K.R.T. Arts, B.H. Commerce & A.M. Science College, Nashik, Affiliated in Pune University

Abstract

One of the most important issues facing the world today is poverty, which has a big impact on social stability, economic growth, and human dignity. Millions of people in India live in poverty, despite the country's strong economic progress. The foundation of efforts to reduce poverty has been government assistance programs, but their efficacy has frequently been constrained by inefficiency, corruption, and a lack of focus. The emergence of artificial intelligence (AI) presents fresh chances to tackle these issues. The use of AI to improve the efficacy of Indian government welfare programs is examined critically in this essay. It looks at how AI might be used to increase service delivery, decrease leakage, and improve targeting while also considering the moral and practical issues surrounding its application. The study ends with policy suggestions for incorporating AI into Policy proposals for incorporating AI into measures to reduce poverty are included in the paper's conclusion.

Keyword: Poverty Alleviation programme , Social Welfare programme, social impact on AI, Digital inclusion.

Introduction:

Poverty is a multifaceted phenomenon that includes possibilities for human growth, access to essential services, and a lack of income. Even though India has made significant progress in the last several decades in eradicating poverty, a sizable section of the populace still lives below the poverty line. To combat poverty, government welfare programs like the Pradhan Mantri Jan Dhan Yojana (PMJDY), the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), and the Public Distribution System (PDS) have been crucial. However, these projects often suffer from inefficiency, corruption, and poor targeting, which restrict their impact.

The Role of AI in Poverty Alleviation

AI has the potential to revolutionize poverty alleviation efforts by improving the efficiency and effectiveness of welfare programmes. AI can enhance targeting by identifying the most vulnerable populations, reduce leakage by detecting fraud and corruption, and improve service delivery by optimizing resource allocation. However, the implementation of AI in this context also raises ethical and practical concerns, including issues related to data privacy, algorithmic bias, and the digital divide.

Literature Review

Poverty Alleviation in India

The literature on poverty alleviation in India highlights the significant role of government welfare programmes in reducing poverty. However, studies also point to the limitations of these programmes, including inefficiencies, corruption, and poor targeting. For example, a study by Drèze and Khera (2015) found that leakage in the PDS was as high as 40%, while a report by the World Bank (2018) highlighted the challenges of targeting in MGNREGA.

AI in Social Welfare Programmes

The use of AI in social welfare programmes is a relatively new area of research. Studies have shown that AI can improve targeting by using machine learning algorithms to identify the most vulnerable populations (Binns, 2018). AI can also reduce leakage by detecting fraudulent activities through anomaly detection techniques (Johnson et al., 2019). However, the literature also highlights the ethical and practical challenges associated with the use of AI, including issues related to data privacy and algorithmic bias (Zuboff, 2019).

Methodology

Research Design

Using a mixed-methods approach, this research combines qualitative case studies with quantitative analysis of secondary data. Using information from the National Sample Survey Office (NSSO) and other government sources, the quantitative analysis aims to assess how AI affects the efficacy of government social programs in India. The qualitative case studies look at instances of AI being used in welfare programs, such the PDS and MGNREGA.

Data Sources:

Government reports, scholarly articles, and case studies are the main sources of data used in this investigation. The effect of AI on reducing poverty is examined using secondary data from the World Bank, NSSO, and other pertinent sources. Case studies are based on previously published works and interviews with important parties, such as public servants, artificial intelligence specialists, and welfare program recipients.

Analysis:

AI and Targeting

Finding the most vulnerable groups is one of the main obstacles to reducing poverty. Conventional targeting techniques, like means-testing, are frequently imprecise and prone to exclusion errors. By employing machine learning algorithms to examine huge datasets and spot trends in poverty, AI can enhance targeting. To determine which homes are most in need of support, AI can, for instance, examine data on household income, consumption, and access to essential services. This can guarantee that the intended recipients of welfare benefits receive them.

AI and Leakage Reduction:

One of the biggest problems with government welfare programs is leakage, or the distribution of payments to unworthy recipients. By using anomaly detection techniques to identify fraudulent activity, AI can lessen leakage. AI, for instance, can examine PDS transaction data to spot fraud trends like the usage of phony ration cards. This can guarantee that welfare benefits reach the intended recipients and help to prevent leakage.

AI and Service Delivery

By allocating resources as efficiently as possible, AI can also enhance service delivery. AI, for instance, can optimize resource distribution by analyzing data on the availability of resources and the demand for

welfare services. This can guarantee the effective and efficient delivery of social services. Additionally, by giving recipients tailored recommendations, AI can raise the standard of service delivery. AI, for instance, can evaluate beneficiary health data and offer tailored health advice.

Ethical and Practical Challenges

Although AI could improve the efficacy of government assistance programs, there are practical and ethical issues with its application. Data privacy is a major ethical concern. Large volumes of personal data must be gathered and analyzed to employ AI in welfare programs, which presents questions with data security and privacy. Algorithmic bias is another possibility, in which AI systems unintentionally discriminate against demographics. Lastly, because many recipients might not have access to digital technology, the digital divide presents a real obstacle to the application of AI in welfare programs.

Case Studies

AI in the Public Distribution System (PDS)

With millions of people receiving subsidized food grains, the PDS is one of India's biggest charity programs. But the PDS has been beset by corruption, inefficiencies, and a large amount of benefit leakage. AI has the potential to enhance targeting and decrease leakage in the PDS. An AI-based system, for instance, has been put in place by the Chhattisgarh government to track the distribution of food grains via the PDS. The system analyses transaction data and looks for fraud trends using machine learning algorithms. This has improved the PDS's efficiency and decreased leakage.

One of India's premier welfare programs, MGNREGA, offers rural households job guarantees. However, targeting and leakage issues have plagued the initiative. AI could enhance targeting and decrease leakage in MGNREGA. For instance, the Andhra Pradesh government has put in place an AI-based system to keep an eye on how MGNREGA is being administered. The technology analyses wage and employment data using machine learning algorithms to spot fraud trends. As a result, leakage has decreased and MGNREGA's efficacy has increased.

Policy Recommendations

Integrating AI into Poverty Alleviation Strategies:

Integrating AI into poverty reduction techniques is crucial to maximizing the technology's promise for reducing poverty. This calls for an all-encompassing strategy that consists of the following components:
1. **Data Collection and Management:** Gathering and managing vast volumes of data is necessary for the efficient application of AI in reducing poverty. Governments ought to make investments in data infrastructure and make sure that information is gathered securely and consistently.
2. **Capacity Building:** Technical know-how is needed to apply AI to reduce poverty. To guarantee that officials have the abilities needed to deploy and oversee AI-based systems, governments should make investments in capacity building.

3. **Ethical Issues:** Using AI to reduce poverty has ethical issues, especially regarding algorithmic bias and data privacy.
4. **Digital Inclusion:** The application of AI to reduce poverty is practically hampered by the digital divide. In addition to making ensuring that recipients have access to digital technologies, governments ought to make investments in digital infrastructure.
5. **Monitoring and Assessment:** AI's ability to reduce poverty should be regularly observed and assessed. To make sure AI-based systems are producing the desired results, governments should set up procedures for observation and assessment.

Conclusion:

By increasing the efficacy and efficiency of government welfare programs, artificial intelligence (AI) has the potential to completely transform efforts to reduce poverty. However, there are both practical and ethical issues with AI's application in this setting. A complete strategy that incorporates data collecting and management, capacity building, ethical considerations, digital inclusion, monitoring, and evaluation is necessary to fully realize AI's potential for reducing poverty. Governments may improve the lives of millions of people and increase the impact of welfare programs by incorporating AI into plans for reducing poverty.

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