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Artificial Intelligence, Digital Inequality and Future-Ready Societies: A Sociological Perspective on Rural Pakistan

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ABSTRACT

The digital technologies and Artificial Intelligence have revolutionized and transformed agriculture, education, healthcare, employment and governance. However, they have not equally benefitted social groups as the rural communities in developing countries such as Pakistan may experience limited digital infrastructure, inadequate technological skills, economic constraints, gender-based inequalities and restricted access to this emerging technology. The present research explores the relationship between artificial intelligence, digital inequality and the development of future-ready societies from a sociological viewpoint. Using a conceptual review approach, this study synthesizes recent academic literature, policy documents, and international reports regarding Artificial Intelligence, digital transformation, rural development, sustainable development and social inclusion. Literature was observed, studies and examined thematically with the purpose of identifying major opportunities and social challenges linked with AI adoption in rural communities. The study highlights that the use of Artificial Intelligence can play a vital role in improving agriculture sector, accessing education, transforming healthcare services, creating livelihood opportunities, disseminating information and delivering public services. However, social and economic inequalities, gender discrimination, limited educational services and geographic inequalities may be created due to the unequal

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distribution of AI adoption. Findings of the study further reflects that technological development alone cannot form future-ready societies unless it is accompanied by the factors such as digital literacy, affordable connectivity, inclusive education, the institutional support, ethical governance and participation of the community. From Sociological point of view, Artificial Intelligence should not be considered only a technological innovation but as a form of social change and transformation that can redesign the patterns of opportunity, power, participation and inequality. Moreover, a human-centered and socially inclusive approach to AI development in Pakistan is highly recommended by the study, particularly for marginalized and rural communities as such an approach can strengthen resilience, participation and equal development across rural communities.

Keywords: Artificial Intelligence; Digital Inequality; Rural Society; Social Inclusion; Future-Ready Societies

Introduction

From being a niche area of technological specialty, artificial intelligence (AI) has grown to constitute an essential element of social and institutional life. The technology finds application in education, agriculture, healthcare, employment, finance, communication and public administration. For nations in the Global South, the key question is about the accessibility and control of AI — who can use it, who cannot, and who controls it. A sociological analysis is critical to investigate how different factors such as class, gender, education, location, institutional set up, and power relations interact with the adoption and adaptation process.

Pakistan is an important case study for understanding the dynamics of AI in a Global South country. The UNDP Pakistan National Human Development Report on digital development positions the country in the lower-middle bracket of digitally developed nations. Not only are there significant regional disparities in the country, but there are also marked differences across genders. However, these differences are important determinants of how different communities and populations will engage with AI and related systems. The reason is that, beyond an internet connection, the use of AI also requires devices, affordability, skills, relevant content, institutional support and confidence to navigate digital systems.

Problem Statement

Rapid AI development may create new opportunities for rural communities as well as reproduce or exacerbate existing inequalities. Rural populations may experience less connectivity and digital literacy, limited access to training, higher relative cost, and a lack of specific services. As such, women and economically disadvantaged groups may experience additional barriers. Thus, if the issue is not handled correctly, AI-

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related development may favor privileged groups over marginalized communities in terms of overall prosperity, making the issue a social distribution issue and not only a technological one.

Objectives

- To examine the association between AI-driven digital transformation and social inequality in rural Pakistan.
- To explore opportunities embedded in AI for rural education, livelihood, agricultural production, healthcare and public services.
- To observe the role of socioeconomic, gender, educational and geographic factors in unequal access to AI-enabled opportunities.
- To design a sociological framework for human-centered and inclusive AI adoption in rural communities.
- To suggest policy directions to build future-ready societies without leaving marginalized groups behind.
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Research Questions

- How can AI contribute to social and economic opportunities in rural Pakistan?
- What social factors influence differential access to AI and digital services?
- How might AI reinforce existing patterns of class, gender and rural-urban inequities?
- What social and institutional preconditions can enable inclusive AI?
- How can sociology contribute to future-oriented societies?
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Methodology

This study utilizes a conceptual review design that pulls together recently advanced arguments, international reports, and policy considerations in relation to artificial intelligence, digital inequality, rural development, social inclusion, and the issues of digital skills and AI governance. Indeed, the study is more analytical and thematic than statistical or quantitative. Five themes were identified and selected for conceptual integration, including (1) access and connectivity, (2) digital and AI skills, (3) socioeconomic and gender inequality, (4) opportunities for rural development, and (5) ethical and institutional governance. This design was selected in order to explore connections and policy implications, rather than to advance original empirical findings.

Sociological and Theoretical Perspective

Digital inequality can be seen as multidimensional social inequality. While the first level deals with access to devices and connectivity, the second level is related to skills and the ability to use technology for a specific purpose. The third level examines

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disparities in the outcomes: for the same level of technology use, different individuals or groups can derive different benefits in terms of education, employment, and economic status. A sociological perspective goes beyond a consideration of whether technology is available or not.

From a social stratification view, resources and access to technology are distributed unequally based on wealth, education, and place of residence. From a gender perspective, the use of technology within a household and the allocation of power between spouses are important factors shaping women's digital activity. In terms of social capital, friends, networks, families, and institutions play a role in promoting a person's or a group's interest and capability to embrace new technologies. Symbolic interactionism is concerned with how people negotiate technology, its associations with modernity and expertise, and how they interpret and adopt it in a new context. A human-centered governance approach views issues of technology fairness, privacy, accountability, and the role of humans in technology systems.

Conceptual Framework

The study found that socioeconomic variables such as gender, education, and rural residence affect access to digital technology and skills related to AI. Individuals and locations with high access and skills may benefit from using AI-enabled services to augment education, economic development, agriculture, health, and governance. In contrast, the research also found that the absence of inclusive institutions and ethical considerations may result in underrepresentation, surveillance, discrimination, and unequal benefits in AI development and deployment.

Structural Conditions	Digital Capacity	AI Use	Social Outcomes	Policy Safeguards
Income, gender, education, rural location	Connectivity, devices, affordability, digital literacy	Education, agriculture, health, livelihoods, governance	Inclusion, productivity, participation, well-being OR renewed inequality	Affordable access, skills, ethical governance, privacy, community participation

8. Key Findings from the Review

1 Digital access remains a social inequality issue

International evidence highlights significant imbalances in geographical and socioeconomic access to the Internet. ITU's 2024 report found that 83% of urban populations globally were estimated to use the Internet, compared to 48% of rural populations. Such a gap suggests that an individual's location may be an important contributing factor to their ability to engage in a given technology-based system. In

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Pakistan, the UNDP reported the presence of considerable variance across regions and social groups in terms of digital development indicators. Therefore, technologies which rely on an individual's access to the Internet may introduce a disproportionate role for location as a factor in engagement.

2 Digital skills are as important as connectivity

Having an Internet connection does not always guarantee active participation in the digital space. Users need information literacy, critical thinking, protection of personal information, and interaction with artificial intelligence. These factors are especially relevant in education and the workplace: the improper use of information and technologies can lead to misinformation, overstaffing, or professional isolation. It follows that AI literacy must be considered a social competence.

3 AI can create opportunities for rural development

AI can assist farmers and consumers in the decision-making process, provide weather and crop information, market information, educational tutoring, health information, translation, administration services and livelihood opportunities. Such opportunities can help overcome the effects of geographic isolation but require reliable infrastructure, relevant local language content, affordability, trust and institutional capacity to realize benefits.

4 Gender and class can shape AI participation

Digital participation is shaped by resources and social relations within households: women may be given fewer opportunities to use devices, time, money, or mobility, while poorer households may choose to allocate money to more essential needs than digital services. The evidence from Pakistan, presented by UNDP, makes clear that there are socioeconomic and gender inequalities which drive digital divides. Therefore, algorithms which seek to cluster rural communities as socially homogenous may fail to recognize important variations between groups.

5 Ethical governance is essential

AI can replicate bias and could raise privacy, surveillance, misinformation, accountability, and discrimination concerns. UNESCO's global AI ethics framework prioritizes human dignity, inclusion, fairness, transparency, human oversight, and awareness and literacy. Ethical governance for rural Pakistan would need to include community consultation, information disclosure about automated systems, privacy data protection, and human review mechanisms.

Discussion

The main argument of the paper is that AI is not neutral to society; its impact is

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mediated by the existing institutions and patterns of resource allocation. If technologically advanced, digitally connected, and educated households can use AI to enhance their educational attainment, productivity, and chances on the labor market, while such opportunities remain unavailable to less privileged households, the divide between different groups may grow. New divides between households may emerge, which is why the digital divide can turn into an AI divide.

At the same time, technology should not be considered an instrument of discrimination. If proper infrastructure, competencies, and institutional structures are in place, then technology can be used to promote inclusiveness and access to knowledge. The critical question then is how societies can ensure that technological change occurs in a manner that enhances social capabilities, the main idea of the human-centered AI approach championed by UNESCO and now being increasingly adopted in Pakistan. A future-ready society should thus be judged not by the quantity and quality of AI systems deployed, but by the readiness of its citizens to participate in the process of technological change. Preparing a country for the era of AI means enhancing citizen agency: promoting digital literacy, critical thinking, cognitive abilities, adaptability, social inclusion, access to lifelong learning, and protection of vulnerable populations.

Policy Recommendations

- Expand access to affordable broadband and mobile networks in rural regions.
- Offer community-based digital literacy programs in AI to women, low-income populations, and older people.
- Ensure that digital literacy, critical AI literacy, and ethics are embedded in secondary and tertiary education curriculums.
- Promote the use of language models and other AI tools in local contexts and for local farming, learning, health, and service provisions.
- Establish community digital hubs in rural areas with college, library, and community center clusters where people can access and engage with digital technology.
- Enhance privacy and transparency in the use of AI in public services while promoting accountability and human agency.
- Use digital inequality indices at the district level to understand who is being excluded and whether AI interventions may exacerbate existing inequalities.
- Engage sociologists in policymaking, development, and evaluation of AI systems and consultative bodies in communities.
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Conclusion

AI has the potential to make future societies more resilient in Pakistan, but the benefits will not flow freely to all. Rural location, poverty, gender relations, education

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and digital skills will determine who participates in the AI-enabled economy and society. A sociological perspective views these factors from the standpoint of social inclusion and its role in technological development. Technology must be used to serve a larger purpose: the extension of human capability, participation and wellbeing. Pakistan can invest in its future by promoting infrastructure and digital literacy, ethical governance and relevance to local needs, and community engagement in order to create an inclusive AI society.

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