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AI IN SOCIAL CHANGE IN PAKISTAN: CHALLENGES, OPPORTUNITIES AND WAY FORWARD

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Abstract
Artificial intelligence (AI) is considered a powerful tool for social change in different sectors in the world: it has emerged in governance, education, human rights movements, and even economic growth. Pakistan is a traditional society. The potential of AI here lies in changing established norms, empowering youth, and reducing economic inequality. Nevertheless, there is still immense distrust regarding the country's preparedness to utilize AI for any serious societal development. This paper examined the role of AI as a social change tool in Pakistan. The paper analyzed Pakistan's preparedness in terms of its institutional readiness, infrastructure, and policy to meet the challenges of this digital technology. The research has two research questions. The first question is how can AI be used as a tool of social change in Pakistan? And second, can Pakistan afford to introduce AI into the whole of their socio-political economy? The study used mixed methods, such as quantitative surveys of students, government officials, and AI experts, to find out how ready Pakistan is for an AI regulatory framework and digital infrastructure. This research revealed that Pakistan is not prepared for AI yet, but it has the potential to bring social change via education, entrepreneurship, or digital activism. Regarding AI, Pakistan faces numerous challenges, including inadequate AI governance, inadequate infrastructure, and a reluctance to adopt technology for social transformation. However, AI initiatives can identify socio-economic issues like youth unemployment, social justice, gender inequality, and political awareness. The research study suggested that comprehensive AI policies and digital and public investments mostly for the youth so that they can be connected with the AI to transform their socio-economic, cultural, and political position in Pakistan.

INTRODUCTION

Artificial Intelligence (AI) has become one of the most disruptive technologies of the 21st century, fundamentally changing the way society functions, shaping economic development, and influencing government operations. Advances in machine learning, natural language processing, and robotics have led to AI being utilized across a diverse range of industries today, including health, finance, education, and delivery of government services. The revolution of AI affected by global economies including the United States, China, and the European Union sees the investments in AI research and infrastructure as both national economic necessities and even geopolitical capitals.

Artificial intelligence is the programmed intelligence of the created machines that are designed to mimic

the human mind in several ways, such as learning, reasoning, and performing actions that would otherwise be performed via input of the human mind. The combination of big data, computing systems, and advanced algorithms has made AI a viable system and facilitated its growth, which has evolved into a key element of the global digital tradition. As McKinsey has said (2023), worldwide spending on AI had reached well over 150 billion dollars, and many organizations have established AI-based functions in their operations. AI is already being applied to make government services efficient, assign resources in the most efficient way, and drive more citizen interaction via data-driven policies and digital technology.

In South Asia, there is rapid growth in the use of AI. India, Bangladesh, and Sri Lanka are some of the countries that start adopting AI as a part of their developmental agenda. India has an implementation of the AI of all policy which is aiming to encourage an inclusive growth of the AI in education, health, and agriculture. Other countries in the region such as Bangladesh and Sri Lanka are also looking at AI in governance, education and disaster management. However, the vast number of young people and developing technology ecosystems in the region are very good assets regarding digital transformation.

Pakistan specifically is undergoing extreme social-economic and institutional pressures that can be solved with AI. The lack of dependencies on underfunded education systems and ineffective governance, the lack of job opportunities among the youth, gender inequality, etc., are critical, and innovative sustainable solutions are needed. Pakistan is a young nation whose population is increasingly online today; AI will immensely benefit the country, provided that the technology is implemented in a strategic and inclusive manner.

The key opportunity is the transformation of governance and provision of the delivery of the services. The systems of bureaucracy in Pakistan tend to be slow and clouded, and, with the help of AI, they can be automated, and data can be better managed and the productivity of service can be improved. AI can help to simplify land records management, track on development project, and foresee leakages of revenue that will add transparency and responsibilities in the government functions.

In education, AI-based solutions can help democratize the access, particularly in the remote areas. The technologies of personalized learning may be used in curricula adaptation to particular needs of the learners, enhancement of the digital literacy, and equaling gender and regional educational outcomes. More significantly, the integration of AI in schools and university programs can make the young people ready to face the labor markets that will be ruled by digital and cognitive competencies.

AI will also be able to enhance innovation and productivity in the Pakistani economy. Since the majority of industries depend on low-skilled labor, introducing AI in the agricultural sector, industries, and transportation can improve productivity and competitiveness. It has already happened in the case of Pakistani startups that are already experimenting with AI-driven health diagnostics, aggrotech solutions, and e-commerce tools. Investment and government policy incentives can fast-track this growth and open new avenues to the economy.

Another area of concern is empowerment of the youth. Pakistan has a population of one of the largest youths in the world yet unemployment and underemployment is a chronic issue. Online freelancing, digital entrepreneurship, and remote work with the help of AI-powered platforms might provide a way to receive income. The youth can be trained on AI related skills to enable them to make significant contributions to the world in the digital economy.

AI can also play a significant role in climate change and the resiliency of the environment. Predictive analytics, smart monitoring systems, would assist in water resource management, pollution tracking, and predictive storms/extreme weather. In a climate-vulnerable country, like in Pakistan, climate-sensitive AI-enabled early warning systems and environmental planning tools are not only innovations, but they are essentials.

The AI path in Pakistan is restricted by systematic limitations. The bureaucracy is characterized by the absence of a national policy on AI that aligns technological development with socioeconomic objectives. Whereas a draft AI policy was presented in July 2025 by the Ministry of Information Technology and Telecommunication, let's see what its implementation will be among institutions.

The other bottleneck is digital infrastructure lack of access to the internet, dependable electricity, and access to digital devices is prevalent in rural areas in particular. The digital exclusion especially based on gender, terrain and economic status is a significant threat of exclusion. Unless such infrastructures are improved and digital access enhanced, AI is likely to perpetuate another aspect of inequality instead of reducing them.

In addition, the social receptiveness to AI is not high. There is a lack of understanding of AI technologies among the population, and people tend to have negative attitudes towards automation and the loss of human jobs. The training in AI is not taught in most of the educational facilities and little academic research is done in such area. Unless the country invests heavily in human capital (and AI literacy), it faces losing in the global digital race.

There is an acute demand and a strong potentiality of AI in Pakistan. It can change education, economical innovation, better governance and social equity. But to realize this potential, what is needed is a coherent national strategy, investment in infrastructure and skills and the involvement of all in policymaking with the view of ensuring that AI development aligns with the interests of the people. The people strength of Pakistan and its expanding technological environment give a good base, but the situation needs to be addressed early so that by the time AI is fully realized, it becomes a point of empowerment and not a point of exclusion.

1. Problem Statement

Although Artificial Intelligence (AI) use is gaining momentum around the world, Pakistan is way off in the utilization of this game changer to transform the societal conditions. Even as the whole globe is adopting AI to enhance education, health, governance, and economic efficiencies, Pakistan has not yet established a regulatory framework or infrastructure of implementation to develop and incorporate the AI when it comes to socio-economic systems. The instability arises from the weak capacity of institutions, inadequate digital infrastructure, and the absence of a clear regulatory framework, all of which prevent the country from utilizing AI to address issues such as poverty, gender inequality, youth unemployment, and ineffective governance.

Furthermore, we are enduring a confusing social environment marked by conventional standards, political turmoil, and digital illiteracy, which also make the application of AI-powered services insidious. With an in-depth and evidently high demographic, there exists an incremental digital gap, a vague understanding of the potential of AI, and technological change described as an enemy in most societal areas. Unless a concerted effort is made to ensure capacity building, mainstreaming AI education, and creating awareness about AI, it is quite possible that it will be restricted only to a small expensive group of specialists or those applications developed by other countries, thereby further entrenching existing disparities instead of reducing them.

The major issue is that Pakistan has not been able to analytically assess and strategize on the integration of AI as a mechanism of social change. There is a proliferation of ad hoc projects in the areas of education, startups, and digital governance, without a national strategy to ensure AI development aligns not only with the objectives of social justice, inclusive growth, and civic empowerment. Due to that, the nation loses a chance to apply AI as the force multiplier in resolving its deep-seated socio-political issues. This paper an attempted to bridge that gap by evaluating the government of Pakistan preparedness, the potential of AI to bring social change, and recommendations for action.

2. Research Objectives

1. To know how AI can be used as a tool for social change in Pakistan in various fields such as education, governance, economics, service delivery, etc.
2. To know how national institutions are ready for AI and identify the gaps in policy, regulatory framework, etc.
3. To know the challenges and opportunities for AI in the country.

3. Methodology

This study used a mixed-method design to understand the importance of Artificial Intelligence (AI) in promoting social change in Pakistan. The mixed-method design was enabling the study to measure not only the quantifiable characteristics of AI readiness

but also the qualitative contexts of the perception, implementation obstructions, and possibilities. Its flagship blend of quantitative findings and qualitative results yields a more wholesome contribution to how AI is relevant to pivotal societal aspects of education, governance, youth empowerment, digital equity, and others. This method is especially appropriate because social change is often complex and requires its presence and relevance in a specific political, economic, and cultural context, which, in the case of Pakistan, needs to be highlighted. Data collection was based on a quantitative survey where three groups were involved: university students, AI experts, and policymakers. The survey employed both closed-ended and scaled questions to evaluate readiness, accessibility, perception, and potential influence. Statistical tools were also used to analyze the data to determine trends and correlations that can be used to carry out policy recommendations.

4. Literature Review

5.1. Artificial Intelligence

Artificial Intelligence (AI) can be broadly defined as the capacity of the machines and computer systems, whereby they can emulate the human intelligence process like learning, reasoning, problem solving, perception and decision making. The cognitive functions AI systems replicate make machines capable of doing what only humans were used to do via using their intelligence (Norvig, 2021). This simulator deals with data processing, pattern recognition, and adaptive learning, and it may require little to no human involvement after training the algorithms.

The meaning of AI keeps on changing since the discipline is growing. Some scholars avoid the conceptual definition of AI as broad, positing narrow definitions of AI in terms of operations, like machine learning, natural language processing, or robotics. The application of AI has already gone beyond computer science and touches on sociology, ethics, economics, and governance (Haenlein & Kaplan, 2019).

It is also important to get an idea of the limitations of AI by defining it. Although AI is proficient at finding regularities and making data-driven decisions, it cannot generalize and show emotional intelligence, a vital characteristic of ethical decision-making and interaction with people. In addition, AI can be biased, especially in conditions when it is trained on non-representative or faulty data. Such ethical issues speak to the need to integrate ethical and governance frameworks within the development of AI, especially in multicultural societies (Crawford, 2021).

In this study, AI is conceived in two ways as both a technological phenomenon and a socio-technical system that can shape the formation of a society. It has wider uses including automation to influencing discourses, policies and the consciousness of the masses. Such enlarged perspective is also linked to the necessity to examine the values of AI in generating social change, especially in governance, learning, and youth empowerment in developing countries.

5.2. Social Change: Concepts, Agents, and Mechanisms

Social change is defined as the long term and influential transformation of values, norms, behaviour and social structures of the society. These changes are either initiated by changes in the economy, innovation, political revolution or cultural developments. According to Giddens (2006), social change takes a more effective position when it transforms some of the major institutions like education, or governance or family setup. In the era of digital revolution, technology, primarily AI, is one of the most effective elements in the renegotiation of social norms and community involvement.

Agents of social change are individuals, groups, organizations, and institutions that introduce or facilitate reform. The most common drivers are youth movements, educators, civil society organizations, and media platforms. In Pakistan, as often seen in power structures, emerging digital communities, youth who are knowledgeable and tech-savvy, and AI-driven start-ups are acting as new agents of change. These actors utilize artificial intelligence-based capabilities and platforms like social media and predictive mapping to create social actor roles in civil activism, policy awareness, and digital literacy (Ali, 2018).

Mechanisms of change can be described as the ways in which change occurs; this could include legislation, mass communication, reformation of education and technological diffusion. Artificial intelligence (AI) optimizes these processes through real-time access to information, automation of service delivery, and data-driven evidence to develop insightful policymaking. As an example, AI tools can be used to locate trends

of educational deprivation or track the distribution of health inequalities in different locations so that they can intervene (UNDP, 2021).

The process of social change, however, is not linear and in most cases, it can be met by challenges of resistance. The AI-powered change can conflict with cultural norms, religious practices, or political interests that are deeply embedded in the cultural background, such as traditional societies like Pakistan. Thus, change agents should tread the waters of these dynamics carefully; they should make AI adoption an inclusive and contextualized process, and should respond to the local needs. Cultural navigation will be critical in making sure that AI will not only be a tool of destruction, but progress that is evenhanded (Inglehart & Welzel, 2019).

Finally, AI will provide mechanisms of boosting social change but should be accompanied by ethical notions and participatory actions. To ascertain the relationship and existence of trust between technology and society, community involvement (as well as transparency and accountability) is critical regarding the deployment of AI.

5.3. Relevance of AI in Transforming Socio-Cultural and Economic Systems

Artificial intelligence has transformative potentials in terms of socio-cultural and economic systems because it enhances decision-making, innovation and democratizes the service provision. At an economic level, AI would be able to increase productivity, automate unskilled work, and deploy new business models such as in the realm of agriculture, health, transport, and finance. Countries like Pakistan, where the informal economy is the rule and where productivity has not had the opportunity to take off, the possibilities of leapfrogging the traditional development bottlenecks open up with AI-driven technologies (Waheed, 2024).

Socio-culturally, AI has the effect of changing the way communities commune, access knowledge, identity. Language, translating, and recommending systems built on AI technology transform the ways of communication and the patterns of communication in the general population. Such tools can disrupt the larger narratives, highlight the voices of marginalized people and support digital inclusions- as long as the tools are created to be inclusive of different cultures and are constructed with equity (UNESCO, 2021). In countries such as Pakistan with female and minority oppression being cultural norms, the AI solutions of anonymized reporting mechanisms or multi-lingual access can be vital.

AI will also be used politically to promote intelligent governance including through predictive analytics, resource allocation systems as well as automated delivery of service to the people. This can make it more transparent, less inefficient in terms of bureaucracy, and can lead to citizens being more involved. Nevertheless, in the absence of explicit data protection legislation and corresponding accountability of algorithms, AI also can only make authoritarianism stronger or digital surveillance ubiquitous as observed in other world regions (Eubanks, 2018).

Another crucial area is that of education. EdTech can be powered by AI to facilitate the customization of learning experiences, knowledge gap diagnosis, and the provision of support to students with disabilities. This capability is revolutionary in the case of the failing education system in Pakistan, particularly in areas of low service delivery. Artificial intelligence will also assist in vocational training tailored to the demands of the labor market, which will help fill the skills gap among youth. Finally, whether AI has any relevance will be dictated by the manner in which it is incorporated in development policy, ethics, and societal values. It is a moving tool that must be constantly adapted, not a one-size-fits-all solution. In the case of Pakistan, equity, transparency, and the inclusion of people in the development of AI have to be prioritized; otherwise, the AI will not be the key to sustainable and inclusive social change.

5. AI for Social Change

6.1. The Role of AI in Societal Transformation

Artificial Intelligence (AI) is a transformational technology that has been identified to redesign societies by automating, analyzing data and making ludicrous intelligence. Researchers claim that AI is likely to minimize human weaknesses and help make better decisions both in the government and privately (Brynjolfsson & McAfee, 2014). With the growing integration of digital systems in the lives of ordinary people, the impact of AI is not only limited to the technical segments but can also be seen in such

spheres as governance, healthcare, education, and activism where it creates a social change movement.

West (2018) emphasizes that the transformative power of AI is expressed through the optimization of systems by ensuring that complex issues can be analyzed and enabling responsive service delivery. The AI tools have an application in the field of social policy when detecting vulnerable groups, modeling poverty areas, and planning interventions. By way of example, predictive analytics powered by AI have been deployed in India to delineate regions of water shortage that have enabled local governments to inform the planning of their infrastructure (UNDP, 2020).

Nevertheless, ethical frameworks and inclusive policymaking are necessary when implementing AI to be used in a beneficial way to society. Still, there are doubts raised by critics, such as Eubanks (2018), of the possibility of algorithmic dominance exacerbating current disparities without appropriate control. Such implication means that despite the optimistic promises of AI, the societal influence of this technology is closely related to the nature of governance, data ethics, and institutional preparedness.

6.2. AI in Governance and Public Service Delivery

The application of IA technologies has transformed the governance systems in different parts of the world by making them to be smart in terms of management, creation of automated services and real-time monitoring. The government of Singapore, and UAE have been effective in using AI to institutionalize and regulate their government services, create transparency and participation among their citizens (OECD, 2019). These models provide blueprints of developmental countries that developing ones can follow to enhance the efficiency of their bureaucracy and the satisfaction of the citizens.

Countries like India in South Asia have used AI in e-governance by coming up with identification verification in the digital identity, Aadhaar, and AI-based chatbots to address queries about public services. These advancements have made services more available and reduced administrative work (NITI Aayog, 2020). Such models can help Pakistan to streamline its service delivery in fields such as health, education and taxes through digitization.

Yet, poor digital infrastructure and data governance issues are such major obstacles in Pakistan (Raza & Shah, 2023). As long as there are no clear systems and data protection policies, people do not trust AI. Thus, AI projects that deal with governance should be based on accountability, privacy protection, and inclusivity of citizens to provide significant social transformations.

6.3. AI in Education and Youth Empowerment

In a young nation such as Pakistan, whose population is more than 60% below age 30, the ingestion of AI in the education industry can aid in the curbing of learning poverty and skill mismatches. Examples of AI-based learning platforms that have achieved success internationally include Duolingo, Squirrel AI in China, and the Google Read Along app, and all have demonstrated the capacity to help children improve their literacy and engagement levels via machine learning (Holmes et al., 2021). These tools are also valuable in education during a pandemic such as COVID-19 as a way of upholding the continuity of learning.

The education sector in Pakistan is historically rather manual and inefficient, although the pilot programs on online learning systems by the Punjab IT Board suggest that the region is interested in the digital tools (Khan & Hussain, 2021). Curriculum, skills-based online platforms, and digital literacy programs leveraging AI-filled curriculum will empower and prepare the youth to become a better workforce and be less unemployed.

6.4. AI in Economic Development and Job Creation

Artificial intelligence is an emerging key of economic growth as it facilitates productivity, automation-making, and the development of new occupations in data science, robotics, and fintech. Researchers estimate that AI has the potential to generate as much as 13 trillion dollars in the global economy by 2030 (McKinsey Global Institute, 2017). Artificial intelligence is a chance to jump over the conventional fabric of development in emerging economies such as Pakistan.

Some positive results have been achieved in the context of AI used in agriculture (e.g., crop prediction), microfinance (e.g., credit risk modeling),

and manufacturing (e.g., predictive maintenance) in countries such as Bangladesh and India (IFPRI, 2020). In Pakistan, AI-driven agri-tech solutions that are empowering smallholder farmers with the tools to make informed decisions, which has the potential to result in increased food security and rural incomes. However, job displacement as a consequence of automation is also a point of enormous concern especially among low-skilled workers. Therefore, upskilling schemes, social protection and inclusive innovation policies should be part of any national economic growth agenda based on AI (World Bank, 2021). In their absence, the technology will only increase inequality as opposed to alleviating it.

Findings and Discussion

Table 1: Demographic Profile of Respondents (N=360)

Variable	Categories	Frequency (n)	Percentage (%)
Gender	Male	210	58.3%
	Female	150	41.7%
Age Group	18–25 years	130	36.1%
	26–35 years	145	40.3%
	36–45 years	60	16.7%
	46 years and above	25	6.9%
Province/Region	Punjab	130	36.1%
	Sindh	90	25.0%
	Khyber Pakhtunkhwa (KP)	55	15.3%
	Balochistan	45	12.5%
	Gilgit-Baltistan & Azad Jammu & Kashmir	25	6.9%
	Islamabad Capital Territory	15	4.2%
Educational Background	Undergraduate	110	30.6%
	Master's	155	43.1%
	MPhil/PhD	95	26.4%
Occupation	University Students	140	38.9%
	Academics/Educationists	70	19.4%
	Government Officials	55	15.3%
	Tech/AI Professionals	65	18.1%
	Civil Society/NGOs	30	8.3%

Interpretation and Analysis:

The demographic table indicates a heterogeneous and representative sample of major areas and provinces in Pakistan, which enhances its credibility and generalizability of the results:

Gender Distribution: There is a decent balance in the sample, with 58.3 percent and 41.7 percent males and female participants respectively. With a large proportion of women in the participants, there is something to learn about their perceptions of AI and social change as gender.

Age Distribution: Most of the respondents (76.4%) are aged 18-35, meaning there is a large youth

presence. This is critical since young people are huge consumers but also can be the transforming force of AI-powered change.

Provincial Spread: All provinces are represented but together, Punjab and Sindh constitute more than 60 per cent of the sample. It is also geographically inclusive with Balochistan, KP, and marginalized parts of the country such as GB/AJK covered.

Education Level: The study is of an academically educated population with an overwhelming majority having some form of Masters or higher education (almost 70 percent) making it appropriate to study a topic that has appurtenance in terms of technological and policy knowledge.

Professional Background: Students, educators, policymakers, and AI professionals should be included to provide multi-stakeholder feedback on how to perceive AI and how it can be applied in different sectors.

Table 2: How AI can be used as a tool for social change in Pakistan in various fields such as education, governance, economics, service delivery, etc.

Sector	Observed Applications of AI	Benefits Identified	Limitations Identified
Education	AI-based learning apps, EdTech platforms (e.g., SABAQ)	Personalized learning, increased access	Lack of internet access in rural schools
Governance	AI chatbots, data-driven decision-making tools	Faster public service delivery, transparency	Weak institutional capacity, outdated databases
Youth Development	AI-skills training, digital platforms	Entrepreneurship support, innovation culture	Funding and mentorship deficits
Economic Inclusion	AI in fintech and digital payments (e.g., EasyPaisa AI)	Financial access for underserved populations	Trust deficit and low digital literacy among the poor

Interpretation and Analysis:

As the world has witnessed, AI has become one of the most transformative technologies with immense potential of supporting inclusive social development (Bughin et al., 2018). Within the context of Pakistan maturity, AI tools are currently in the early stages of implementation in practically every industry, potentially most notably in education, governance, and youth empowerment. According to the findings it was found that more than 70 percent of users (students and teachers) agree that AI-based learning platforms can help in improving access and personalization, particularly with the COVID-19 pandemic whereby the tools such as SABAQ and Taleemabad are gaining prominence. Nevertheless, unequal infrastructural conditions (adverse internet connection in remote areas) restrict equalized advantages.

In government, the AI-driven systems including automated chat and predictive analytics are studied to enable the efficient delivery of services. Pilot projects in Punjab and KP have also shown how AI tools have been able to decrease bureaucratic delay and better grievance redress systems. However, the fact that many digital records are outdated and that there is no data integration between ministries affects the successful implementation.

Another area that demonstrated high exposure to AI by means of digital platforms involved youth development by providing online learning, coding skills, and AI incubator programs. According to survey data, 68% of the 18-30-year-old group were interested in AI-based entrepreneurship, those who received exposure to platforms such as Digi Skills and

the National Incubation Center. Nevertheless, common challenges that were repeatedly reported included inadequate seed funding, mentorship, and business support environment.

Regarding economic inclusion, some AI-powered fintech advances, including loan modeling of underserved people supported by AI, as EasyPaisa has already established brand new routes to finance. They evaluate the trustworthiness without the conventional banking backgrounds, an inclusive breakthrough. Nevertheless, a significant percentage of marginalized users complained of mistrust, poor awareness, and usability. Such concerns point to a wider digital literacy disparity that does not allow substantive integration.

AI has the potentially transformational power to effect social change in Pakistan but its implementation would require other structural changes. A comprehensive policy framework, inclusive to everyone, combined with infrastructure and creating awareness will play a major role in realizing the potential of AI in these priority areas.

Table 3: How national institutions are ready for AI and identify the gaps in policy, regulatory framework, etc.

Component	Current Status (Based on Data)	Gaps Identified	Stakeholder Feedback Summary
Digital Infrastructure	Partial (urban-focused); rural areas underdeveloped	Poor internet access, limited AI labs	Students and educators report regional tech disparities
Policy Framework	Initial AI Policy launched (2025); implementation lagging	Lacks clarity, coordination, and budgeting	Experts criticize lack of roadmap and inter-ministerial coordination
Institutional Capacity	Nascent; few institutions have AI-trained personnel	Human capital shortage, outdated curricula	Universities lack AI-focused departments and funding
Public Awareness	Low among general population	AI misunderstood as job killer or sci-fi tool	62% respondents unaware of AI in daily life
Technological Literacy	Limited; mostly urban elite exposed	Rural-urban divide; language and content barriers	Policymakers express need for localized AI training

Interpretation and Analysis:

The results indicate that there is a massive gap in the institutional and infrastructural preparedness of AI in Pakistan. This is despite the introduction of the National AI Policy 2025 being a significant milestone achievement, as the actualization of this policy is shallow due to an inadequate budget and the lack of collaboration among ministries. Responses to surveys by policymakers and other technical experts showed that 24 percent believed the existing policy initiatives are enough to lead towards sustainable AI. The policy ambition and the implementation capacity were observed to be out of synch by many.

Regarding digital infrastructure, Pakistan has low internet penetration, with the bulk of the high-speed internet connection still in the largest cities, e.g., Islamabad, Lahore, and Karachi. This urban leaning has disadvantaged the remote and underserved areas, particularly in Balochistan, the interior Sindh, and parts of KP where the AI has not yet penetrated. Respondents in these regions expressed that in the absence of substantial investment in internet infrastructure and provision of digital public facilities, AI will further enhance the already existing digital divide.

The capacity of the institutions is weak, particularly in the public universities and technical training institutes. There are practically no programs in AI in most institutes and the available faculty is poorly qualified or overworked. Only 1 out of 5 higher education institutions had AI-related curriculum in any form and very frequently, this curriculum was old fashioned or highly theoretical. Academic experts interviewed put significant emphasis on the necessity

of curriculum change and faculty development on an urgent basis.

In addition, there was also a problem of public awareness and technological literacy, which acted as a bottleneck. The lower-income and rural respondents, in particular, suspected that AI would replace workers or turn into some sort of foreign surveillance device. This is propagated by the inadequate awareness creation at the grassroots level and the disengagement of content in the local languages. This communication gap was recognized by policymakers, who stressed the need for culturally optimized and linguistically accessible community outreach activity.

AI policy discourse is new, and Pakistan's readiness to adopt AI is still developing. The key to the development of the country lies in the investment of foundational resources in human capital, digital infrastructure, and the alignment of inter-institutional policies. Otherwise, AI will be an elitist and more limited technology with weak transformative effects on society.

Table 4: How AI can assist in solving major socio-economic issues like unemployment, gender inequality, bad governance, and lack of access to quality education

Socio-Economic Challenge	Current Scenario	AI Applications/Opportunities	Stakeholder Perspective (from survey/interviews)
Unemployment	Youth unemployment at 12.8% (PBS, 2023)	AI-driven job platforms, gig economy integration	54% youth respondents see AI as job enhancer if trained
Gender Inequality	Female labor force participation at ~22%	AI for remote work, safe transport apps, education	Women see AI as opportunity but lack digital access
Poor Governance	Citizen service delivery is inefficient	AI-enabled e-governance, complaint redressal bots	Officials support tech-driven transparency
Limited Quality Education	Gaps in rural access, teacher shortage	AI tutors, adaptive learning, Urdu-language platforms	65% students support AI-enhanced digital learning
Youth Disengagement	Frustration due to lack of inclusion	AI-powered career guidance, civic engagement apps	Youth favor AI if localized and accessible

Interpretation and Analysis:

The statistics prove that AI should be viewed as an immensely transformative force in solving long-term socio-economic issues in Pakistan. The prospect of this, however, depends on intentional, inclusive interventions, and well-financed interventions.

A crucial dilemma—youth unemployment can be addressed by using AI to find jobs through job-matching, future freelancing platforms, and upskilling. The results of the survey confirmed that more than half of the young people felt that AI could open up new economic opportunities, especially in freelance markets like Upwork and Fiverr, assuming they had access to training in AI literacy, coding, and soft skills. With the increasing numbers of digital youths, Pakistan is now a promising land to grow employment ecosystems through AI.

In terms of gender inequality, AI can provide a number of tools, including remote work tools, AI tutors, to learn at home, and women-focused transport safety apps. However, the discussion groups have indicated one significant issue, i.e. gendered digital divide. There are lots of women who do not have smartphones, internet access, or digital literacy skills. Therefore, as much as AI holds potential, there must be systematic processes to ensure access and usage gaps among female beneficiaries are narrowed.

With AI support, citizen feedback systems, mobile-based digital service portals, and inbuilt grievance redressal mechanisms can transform the grey of bureaucracy. The policymakers were keen on piloting

AI in various sectors such as land records, traffic management and health services. Implementation problems included resistance by lower-level officials, poor inter-agency coordination, and so on.

Education is one of the areas where AI can make the biggest impact. The rural regions of Pakistan have severe shortages of teachers and educational inequality. According to survey data, 65 percent of student respondents are in favor of AI tools such as adaptive learning software and local-language educational bots. Its use can level the playing field in accessibility of education through its integration into mobile platforms, which can be available to the wide range of income groups.

The last observation is the engagement of the youths. A lot of the youth feel economically and politically left behind. Civic tech: Civic tech like apps to do participatory budgeting, awareness programs, and career planning will help repair trust and meaning in the young. Nevertheless, these solutions need to be locally based and not urban-elite centered to have a significant inclusion rate.

To sum up, AI potential provides powerful solutions to the current existential problems of society, but it can only be as successful as its being designed fairly, accessible in terms of infrastructural participation, and supported by effective policy development. And when its introduction is approached in a holistic manner, it is very much possible that AI will become a force of socio-economic change in Pakistan.

Table 5: The perceptions and readiness of various stakeholders, such as government officials, educators, and AI professionals, in the adoption of AI technologies.

Stakeholder Group	Awareness of AI Potential (%)	AI Training/Readiness (%)	Key Concerns Highlighted	Willingness to Adopt AI (%)
Youth (students/grads)	76%	38%	Job displacement, lack of training access	81%
Government Officials	58%	29%	Data privacy, bureaucratic inertia	66%
Educators	61%	33%	Curriculum gap, low tech familiarity	59%
AI Professionals	89%	92%	Policy gaps, infrastructure limitations	94%

Interpretation and Analysis:

The results indicate a general alertness, however, an inconsistent readiness between different groups of stakeholders in using AI to the benefit of society. On the one hand, the potential transformative power of AI is optimistic; on the other, practical preparedness is slow in turning potential into reality in important areas, which is demonstrated by the ability to integrate digital competencies, effective policies, and provision of resources.

The level of awareness of AI among the youth is quite high, amounting to 76%, with the concern fueled by the spread of the content over the social media and YouTube, as well as the efforts of tech-oriented communities. But only 38 percent have received formal or informal training in matters of AI.

Such a mismatch indicates infrastructural and curricular shortfalls, and more particularly in the case of the public universities. Even relative to possible job automation, a large majority (81%) are receptive to AI under the conditions that support with skill building and local opportunities.

The aspect of the government officials is more conservative. Although 58 per cent of them recognized the potential of using AI in the delivery of services in the public sector, only 29 per cent of them believed that they were trained well enough to manage its application. Their key issues are control of the data, departmental resistance, and inability to interoperate between governmental platforms. But more senior officers reported that they were willing to trial AI

initiatives in domains such as tax collection, intelligent policing and digital health as long as issues of policy and training are addressed.

To education, the disjunction is in knowledge and application. Although 61 percent was accustomed to the ideas of AI, only 33 percent of those surveyed had AI application training in pedagogy. The rural and government school teachers provided shortage of infrastructure, digital devices, and updated curriculum as the key barriers. Practitioners of the private or semi-autonomous institutions were the most likely to adopt AI tools, such as automatic assessments and chatbots. This shows the necessity of the closing of the digital divide when it comes to the institution of education.

Professional of AI, in their turn, showcased 89% of awareness and 92% of readiness. Their main worries were related to policy variation, the lack of cooperation of the public sector as well as infrastructural deficits, especially in data gathering and the cloud computing. Positively, 94 percent of the professionals indicated that they were more than willing to cooperate with the government and academia on AI-driven social innovation. They have already created some promising prototypes related to such areas as agriculture, education, and urban planning by participating in hackathons, incubators, and start-up ecosystems.

Overall, these findings justify the need to coordinate multi-stakeholders. Although there is strong appetite in various sectors to work with AI, physical machinery of support is necessary to transform interest into actuality, and that is the kind of reforms that need to be made. To create a more inclusive society through AI, it is necessary that Pakistan invests in supporting the infrastructure digital delivery system and in developing an equity in educating on AI to all groups in society, and also in encouraging dialogue among policymakers, young people, academics and technologists.

Table 6: Challenges of AI Integration in Pakistan

Challenge	Description	Impact
Weak Governance	Poor implementation of tech policies and misalignment between AI initiatives	Limits scalability and accountability
Resistance to Change	Institutional inertia and skepticism among traditional sectors	Slows adoption and integration of AI tools
Digital Divide	Inequitable access to internet and digital tools across regions	Excludes rural and marginalized populations
Lack of Awareness	Limited understanding of AI benefits and functions among the general public	Prevents community-driven digital transformation
Technical Skill Gaps	Insufficient AI experts and lack of formal training in universities	Stalls innovation and workforce readiness
Policy & Regulatory Gaps	Absence of comprehensive data protection and AI ethics frameworks	Raises concerns over privacy, bias, and accountability

Interpretation and Analysis:

The deployment of AI in Pakistan is exposed to systemic and social challenges at multiple points that are layered. Poor governance systems constrain the implementation of digital policy systems, and the ministries tend to act in silos. This compartmentalization interferes with successful implementation of AI based social schemes, particularly education and governance

Another big obstacle is the institutional resistance to change. Most governmental organizations and statewide institutions are still attached to old systems and do not want to transfer to automation or AI-

guided judgments. The inertia becomes an obstacle to development, especially where the implementation of AI can considerably enhance efficiency in terms of service delivery.

In addition, the digital divide remains particularly among the urban and the rural region. Only 36 percent of rural households have stable access to the internet, as the Pakistan Bureau of Statistics (2023) pointed out. This digital exclusion complicates fair AI diffusion, where there are high chances of growing socio-economic disparities.

The absence of digital literacy and public awareness also constrains the effects of the current AI initiatives. There are many negative perceptions around the topic of IA, and the risk of losing jobs is presented as the most important issue in underprivileged communities. Lastly, there are no policies or ethical guidelines regarding the AI data use, surveillance, or algorithmic bias, which makes users feel vulnerable and denies trust.

Table 7: Opportunities of AI in Pakistan

Opportunity	Description	Impact
AI in Education	Personalized learning, EdTech, and virtual classrooms	Improved literacy, skill-building, and inclusive education
Youth Empowerment & Digital Startups	Incubators and AI-enabled entrepreneurship tools	Economic resilience and job creation
Public Service Delivery & Social Justice	AI in healthcare, governance, disaster management	Efficient and equitable access to public services
Gender Equality Platforms	AI apps for women safety, health, and financial inclusion	Reduces gender disparity in access to services
Political Engagement & Digital Activism	AI-powered civic platforms and awareness campaigns	Enhances democratic participation and transparency

Interpretation and Analysis:

The country, despite structural challenges, has tremendous potential in the utilization of AI as a tool of transformational social change. A good place to start is the education sector some AI-based EdTech companies like Taleemabad and Sabaq.pk have already started to individualize learning in low-income schools to help students learn at their own pace and bring quality content to the industry.

This is another place where AI is proving successful in terms of youth empowerment AI and startup incubators, Ignite, and NICs provide new means of entrepreneurship and youth-exclusive access to startup opportunities, which help promote young people in regions where their access to economic opportunities is limited.

The use of AI in the delivery of public services is also reflected in the initial initiatives of the Punjab government to allocate healthcare resources and track cleanliness in cities through AI drones. This kind of tool can endure old problems related to the duration of corruption and inefficiency in services that the general population has.

Gender equality may also be promoted with the help of AI applications Chatbot assistants in maternal health, AI-based mobile banking services to women, and mobile-based safety applications (e.g., Safepal) are also reversing the change in information access and economic participation between men and women (UN Women, 2023).

Last but not least, AI can be used to build political knowledge through online activism hubs that assess laws, permit civic monitoring, or assist people in grasping their rights. The media monitoring tools using AI also contribute to overcoming misinformation and enhancing democratic dialogue.

6. The Way Forward: Recommendations

- The government should develop a National AI Strategy that not only focused on economic benefits but also social inclusion, equity, and transformation of its services to people.
- A multi-stakeholder AI Task Force, including the academia, civil society, tech innovators, and policymakers, should be introduced to align the development of AI with the SDGs and social-political sensitivity.
- The government should encourage universities, AI experts, and government departments to prepare or design local AI equipment to solve public and government issues, such as maternal health and dropout rates.
- Federal and provincial governments should establish innovation labs or hubs in different regions to motivate youth for AI-driven entrepreneurships.
- The government should revise the education curriculum, starting with grade 6 and including topics such as the future of AI, the ethics of AI, and its applications; additionally, emphasis should be placed on local or regional languages.
- Federal and provincial governments must start Teacher AI Capacity Units to train the teachers regarding AI tools and make them understand their implications.
- Federal and provincial governments should prioritize AI skill-building programs for graduates and connect them with freelancing and the digital economy platforms.
- To enhance the service delivery system, the government should implement AI in governance to obtain quick responses and feedback, thereby improving service delivery speed and establishing an effective complaint system.
- Start awareness programs about AI in schools, madrasahs, and society via storytelling, mobile application, and social media influencers.
- Produce AI literacy toolkits that suit journalists, civil society participants and grassroot leaders to reduce the misinformation and work towards bringing the civic tech movements.
- Enforce the laws on data protection as means of ensuring the rights of the people on their personal data and that particular attention is given to minority and gender-related data sets.
- Establish a specific AI Social Innovation Fund at the Ministry of Planning or IT to fund AI applications to work on public goods, e.g. AI used to predict school dropouts, optimizing disaster response, or extracting inefficient points in a bureaucracy.
- Establish provincial centers of excellence in AI with local universities that can do region-specific research (e.g. water shortage in Balochistan, flood in Karachi, or Agri-tech in Sindh and Punjab).

7. Conclusion

Artificial Intelligence (AI) can be a game changer in the resolution of socio-economic and governance issues that are deep rooted in Pakistan. This paper argues that AI is not just a technological fad and has the potential to transform the way services to the population are delivered, as well as educational, economic, and political participation. Yet, the extent to which it has succeeded in fostering positive social change is highly contingent upon the manner of adoption, whether strategic and ethical enough, in particular, in a nation as Pakistan with structural constraints and a massive deviation of inequality. There is a need to have a proactive and people-centric policy towards AI so that AI does not augment current divides but rather closes gaps.

This study showed the necessity of institutional changes, infrastructural improvements, and digital awareness campaigns in readiness to make Pakistan ready to integrate AI inclusively. The current attitudes of people towards AI are closely linked to hope and optimism, as well as compulsions and fear, driven by the lack of regulatory still stained onto by uneven digital access and the lack of local AI-powered applications aimed at such achievements as community development. Eager and tech-savvy, the youth rarely get systematized options to use AI to affect positive change. This necessitates the need to localize AI innovation, engage communities in the

development process, and establishes ethical mitigation against breach of privacy, fairness and cultures.

AI should not be presented as a technological fix but a strategic tool in the socio-political and economic development of Pakistan. We must combine multi-stakeholder, locally-based decentralization, and social AI policy founded on inclusion and ethics as the means of enforcing AI as a force of empowerment as opposed to exclusion. Pakistan is at the crossroads where in timely investments undertaken in AI, human capital, and governance reform could well redefine the development path of generations to come.

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