

Algorithmic Injustice: Reconceptualizing Legal Framework for Women Rights in Pakistan's Emerging AI Governance Landscape

Nauman Hassan Lodhi¹, Mohsin Raza² & Hobashia Saleem³

¹LLM Scholar, Islamia University Bahawalpur, Email: naumanhassan1800@gmail.com

²PhD Scholar, Lecturer University of Southern Punjab, Multan, Email: Mohsinmahni495@gmail.com

³Advocate High Court, Bahawalpur, Email: hobashiasaleem@gmail.com

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Corresponding Author:

Nauman Hassan Lodhi

Email:

naumanhassan1800@gmail.com



ABSTRACT

The rapid integration of Artificial Intelligence (AI) into governance, digital services, financial systems, and public administration is transforming regulatory and social structures across the world, including in Pakistan. While AI technologies promise efficiency, innovation, and improved decision-making, they also present significant risks of algorithmic bias and discrimination, particularly for marginalized groups such as women. In Pakistan, where structural gender inequalities persist in access to education, employment, and technology, algorithmic systems may inadvertently reproduce and amplify existing social and cultural biases embedded in data and institutional practices. Consequently, the emergence of AI-driven decision-making raises critical legal and human rights concerns regarding the protection of women's rights. This research examines the concept of algorithmic injustice and analyzes how automated decision-making systems may affect women's rights within Pakistan's evolving AI governance framework. The study critically evaluates the adequacy of existing legal mechanisms, including constitutional guarantees of equality, emerging digital governance policies, and developing data protection initiatives, in addressing gender-based algorithmic discrimination. By identifying gaps in transparency, accountability, and regulatory oversight, the research highlights the limitations of traditional legal frameworks in responding to technologically mediated forms of inequality. Adopting a doctrinal and interdisciplinary approach, the article integrates perspectives from technology law, human rights law, and feminist legal theory to reconceptualize the role of law in regulating algorithmic decision-making. Ultimately, this article contends that addressing algorithmic injustice is essential for safeguarding women's constitutional and human rights in Pakistan's digital transformation. A gender-responsive legal framework is therefore necessary to ensure that the adoption of AI technologies promotes equality, social justice, and inclusive governance rather than reinforcing existing gender disparities.

1. Introduction

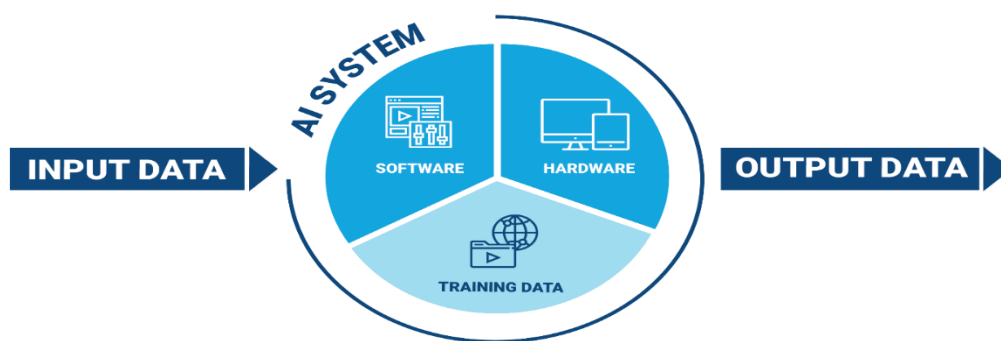
The rapid advancement of Artificial Intelligence has transformed the way governments and institutions operate in the contemporary digital era. AI systems increasingly influence decision-making in areas such as financial services, employment recruitment, criminal justice, healthcare, and social welfare administration. These technologies rely on large datasets and computational models capable of identifying patterns and generating predictions that inform administrative and commercial decisions. While such systems offer significant advantages in terms of efficiency and predictive capability, they also present profound legal and ethical challenges. One of the most pressing challenges associated with AI-driven governance is the emergence of algorithmic discrimination. Unlike traditional forms of discrimination, which are typically associated with human decision-making, algorithmic discrimination arises from computational processes embedded within automated systems (Wadhwa, 2021). These systems may generate biased outcomes due to discriminatory datasets, flawed design assumptions, or institutional practices that reflect historical patterns of inequality. The risks associated with algorithmic injustice are particularly significant for marginalized groups such as women. In many societies, including Pakistan, gender inequalities persist across various socio-economic domains. Women frequently face barriers in accessing education, employment opportunities, financial services, and digital technologies.

When algorithmic systems are trained on datasets reflecting these inequalities, the resulting models may interpret discriminatory patterns as predictive indicators rather than manifestations of structural injustice. Pakistan has experienced rapid growth in digital technologies and e-governance initiatives over the past decade. Government programs aimed at promoting digital identification systems, electronic financial services, and online administrative platforms increasingly rely on data-driven decision-making processes (Smith & Thomas, 2020). Although these developments contribute to economic modernization and administrative efficiency, they also introduce new risks of technological discrimination. Pakistan's constitutional framework provides strong guarantees of equality and fundamental rights. Nevertheless, these constitutional provisions were formulated within a traditional legal context that did not anticipate the emergence of algorithmic governance systems. Consequently, the existing legal framework may be ill-equipped to address the complex regulatory challenges posed by artificial intelligence.

This article examines the phenomenon of algorithmic injustice and explores its implications for women's rights within Pakistan's evolving digital governance landscape. It argues that existing legal mechanisms are insufficient to address algorithmic discrimination and that a comprehensive regulatory framework is required to ensure that AI technologies operate in accordance with constitutional principles of equality and human dignity (Nguyen, 2021). The digital revolution has intensified reliance on algorithms for decision-making in domains traditionally governed by human judgment. These automated systems claim to enhance efficiency, accuracy, and objectivity, yet their widespread use has revealed significant social and ethical challenges. Central among these is the issue of algorithmic bias instances where automated systems replicate historical prejudices, amplifying inequalities in access to resources and justice. Marginalized communities, already disadvantaged by systemic inequities, face disproportionate risks under such algorithmic regimes. The discourse on data justice provides an essential lens to evaluate these implications, emphasizing the alignment of technological systems with fairness, inclusivity, and accountability. In legal contexts, algorithmic decision making raises critical questions about due process, discrimination, and the adequacy of existing regulatory frameworks. The rise of predictive policing, algorithmic hiring tools, and credit scoring models has shown that marginalized populations are often penalized by opaque and biased systems (O'Neil, 2016).

Against this backdrop, the present study investigates the social, ethical, and legal dimensions of algorithmic bias. It situates algorithmic governance within the paradigm of data justice, arguing that a transformative, equity-centered approach is necessary to safeguard vulnerable populations from technological exploitation. There is no widely accepted definition of AI; however, the term “AI” refers to a “Computerized system that uses cognition to understand information and solve problems”. An AI system is fundamentally a computer system that employs AI algorithms to achieve specific goals with a certain degree of autonomy. While there are various types of AI systems, all consist of a combination of software and hardware designed to produce outputs based on the inputs they receive (Kuner, 2020). More specifically, an AI system comprises an AI algorithm, software, and a computer where the algorithm is processed, as well as hardware. There are numerous types of AI algorithms, but machine learning algorithms are the most prominent and commonly used in the AI field; therefore, they will be discussed in detail. In very simple terms, these algorithms learn from data. This implies that most AI systems today comprise software, hardware, and data. The Figure below illustrates these three components:

Figure 1: how the input and output mechanism work in AI?



Source: How an AI system works (<https://www.ai-lawenforcement.org/guidance/intro>)

2. Conceptual Framework: Understanding Algorithmic Injustice

Algorithmic injustice is best conceptualized as a multi-layered socio-legal phenomenon that emerges from the interaction between technological systems, institutional structures, and existing social hierarchies. It is not limited to discriminatory outcomes alone but extends to the entire lifecycle of algorithmic systems, including data collection, model design, deployment, and iterative learning processes. In this sense, algorithmic injustice reflects a continuum of bias, where inequalities embedded in society are translated into digital infrastructures and subsequently reproduced at scale (Bashir, 2021). For countries like Pakistan, where gender disparities are already deeply entrenched, algorithmic systems risk formalizing and legitimizing discrimination under the appearance of technical objectivity. Therefore, understanding algorithmic injustice requires moving beyond a purely technical lens and adopting an interdisciplinary approach that integrates legal theory, social context, and technological design.

2.1 Sources of Algorithmic Bias

Algorithmic bias originates from multiple, interconnected sources, each contributing to discriminatory outcomes in distinct yet reinforcing ways. One of the most significant sources is data bias, which arises from the reliance of AI systems on historical datasets. These datasets often mirror existing societal inequalities, including gender disparities in education, employment, and economic participation. In the Pakistani context, where women’s representation in formal sectors

is comparatively low, datasets used for training AI models may disproportionately reflect male experiences. As a result, algorithmic systems particularly those used in recruitment or credit scoring may systematically disadvantage women, not due to explicit discrimination, but because the underlying data itself is skewed (Khan & Ahmad, 2020).

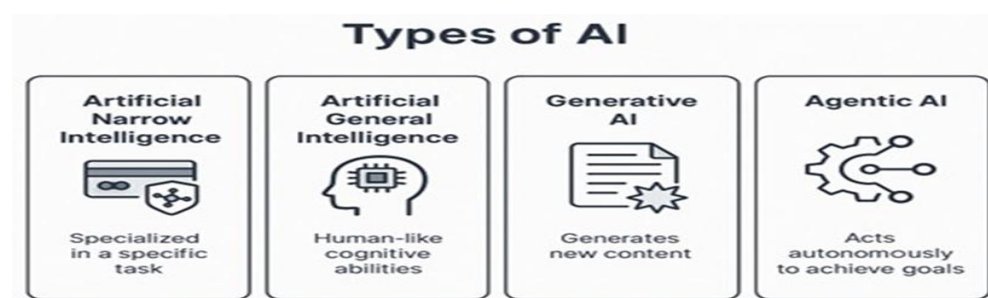
Another critical source is design bias, which stems from the assumptions, values, and decisions of system developers. Algorithms are not self-generating entities; they are designed by humans who operate within specific cultural and institutional contexts. Developers may unconsciously encode gendered assumptions into systems, such as associating leadership roles with male characteristics or undervaluing career interruptions that disproportionately affect women. In Pakistan, where the technology sector itself lacks gender diversity, the risk of embedding such biases is particularly pronounced. A further dimension is the presence of feedback loops, through which algorithmic systems reinforce and amplify their own biases over time. For example, if an AI hiring tool consistently favors male candidates, the resulting workforce data will further validate the algorithm's initial assumptions, creating a cycle of exclusion (Zhou et al., 2020). These feedback mechanisms transform isolated biases into systemic patterns, making discrimination more persistent and difficult to detect.

2.2 The Myth of Technological Neutrality

A central misconception in contemporary AI discourse is the notion that algorithms are inherently neutral and objective. This belief is rooted in the perception that computational processes operate independently of human subjectivity. However, this assumption fails to recognize that AI systems are fundamentally socio-technical constructs, shaped by human choices at every stage of their development. From the selection of training data to the design of optimization criteria, human agency is deeply embedded within algorithmic systems (Fussey & Murray, 2019).

Feminist legal scholars have critically challenged the idea of technological neutrality, arguing that it often serves as a discursive tool that obscures power relations. By presenting algorithmic decisions as objective, institutions can deflect accountability and legitimize outcomes that may otherwise be recognized as discriminatory. In the Pakistani context, this is particularly concerning, as existing gender biases may be reinforced under the guise of technological efficiency and modernization. Moreover, the myth of neutrality overlooks the structural conditions under which AI systems are developed and deployed (Gillespie, 2019). These systems are often created within institutional environments that reflect broader societal inequalities, including gender imbalances in education, employment, and decision-making. As such, algorithmic systems do not merely reflect reality; they actively participate in shaping it, often in ways that disadvantage already marginalized groups. The AI exists in different forms and structure as shown below.

Figure 2: Types of AI.



Source: Author's representation

This figure states that, Understanding AI governance demands a nuanced taxonomy of AI systems, each type akin to a distinct species within a complex technological ecosystem. These systems differ not only in functionality but also in their risk profiles, societal impacts, and regulatory needs, requiring tailored governance approaches that reflect their capabilities, degrees of autonomy, and potential for harm or misuse. Artificial Narrow Intelligence (ANI) represents the current state of most AI technologies specialized systems designed for specific tasks. A chess-playing computer or a recommendation algorithm are prime examples (Zuboff, 2019). These systems excel within their defined parameters but lack broader cognitive flexibility. Governance for ANI focuses on ensuring reliability, preventing unintended consequences, and maintaining transparency in decision-making processes. For instance, a credit card fraud detection system analyzes transaction patterns to flag unusual behavior. It's excellent at spotting discrepancies, but it cannot apply its "knowledge" to unrelated tasks, such as diagnosing diseases.

2.3 Legal Characterization of Algorithmic Harm

From a legal perspective, algorithmic injustice presents significant challenges to traditional doctrines, particularly in relation to causation, intent, and evidence. These foundational principles of legal liability are often ill-suited to the complexities of AI-driven decision-making (Eubanks, 2018). First, the issue of causation becomes highly complex in algorithmic contexts. Unlike traditional cases where harm can be directly linked to a specific actor or action, algorithmic decisions result from multi-layered computational processes involving data inputs, model training, and automated outputs. This diffusion of responsibility makes it difficult to establish a clear causal link between a particular decision and a specific harm, thereby complicating legal accountability (Buolamwini & Gebru, 2018). Second, the requirement of intent in many legal systems poses a significant obstacle. Anti-discrimination laws often rely on demonstrating discriminatory intent, yet algorithmic systems operate without conscious intention. Discrimination may arise not from deliberate bias but from structural inequalities embedded in data or design. This creates a gap in legal protection, as harmful outcomes may occur without meeting the traditional threshold of intent.

Third, the issue of evidence is particularly challenging due to the opacity of many AI systems. Often described as "black boxes," these systems do not readily disclose how decisions are made. This lack of transparency undermines the ability of affected individuals to challenge discriminatory outcomes, as they may lack access to the information necessary to prove bias. In jurisdictions like Pakistan, where technical expertise within legal institutions is limited, this challenge is even more pronounced (Casey et al., 2019). Collectively, these doctrinal limitations highlight the need for a reconceptualization of legal principles to address algorithmic harm effectively. This may involve shifting from intent-based liability to impact-based standards, introducing obligations of transparency and explainability, and developing new evidentiary frameworks tailored to AI systems. Without such reforms, the legal system risks becoming increasingly disconnected from the realities of technological governance, thereby failing to protect fundamental rights in the digital age (Narula, 2020).

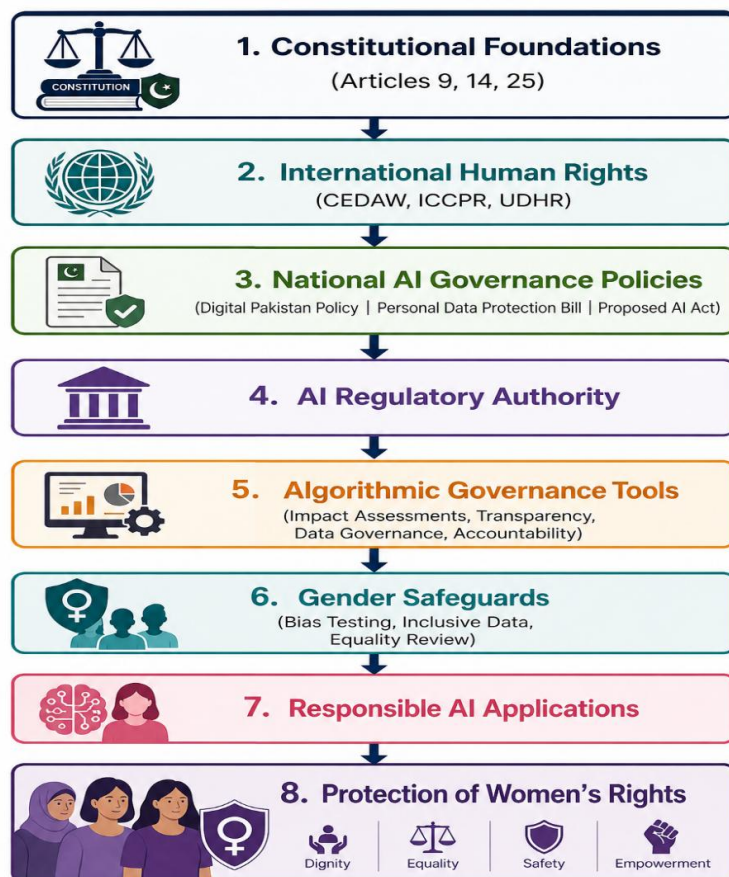
3. Women's Rights in Pakistan: A Legal Overview

3.1 Constitutional Framework

The Constitution of Pakistan provides a normative foundation for gender equality, embedding principles that, in theory, support the protection and advancement of women's rights. Article 25 establishes equality before the law and explicitly prohibits discrimination on the basis of sex, while Article 34 obligates the State to ensure the full participation of women in all spheres of national life (Shao et al., 2020). Additionally, the Principles of Policy though non-justiciable reinforce

commitments to social justice, human dignity, and the elimination of exploitation. Together, these provisions create a constitutional architecture that recognizes both formal equality and the need for inclusive participation. National and international statutes, documents ensure the protection of women rights inclusively around the globe as shown in the figure.

Figure 3: Constitutional framework and international covenants Governing AI



Source: developed by the Author

However, despite this strong textual commitment, a significant gap persists between constitutional ideals and lived realities. The enforceability of these rights is often constrained by weak institutional mechanisms, limited administrative capacity, and inconsistent judicial enforcement. Moreover, constitutional provisions were framed in a pre-digital era and do not explicitly address emerging forms of discrimination arising from technological systems such as artificial intelligence (Brown & Choudhury, 2020). As a result, while the Constitution offers a broad interpretive basis for challenging gender-based discrimination, it lacks the specificity required to effectively regulate algorithmic harms. This disconnect renders constitutional protections, to a considerable extent, aspirational rather than operational, particularly in rapidly evolving digital environments (O’Neil, 2016).

3.2 Statutory Protections

In addition to constitutional guarantees, Pakistan has developed a range of statutory instruments aimed at protecting women’s rights across different domains. These include laws addressing domestic violence, workplace harassment, and labor-related discrimination. For instance, workplace harassment legislation provides mechanisms for reporting and redressing gender-based misconduct in professional settings, while labor laws incorporate provisions designed to ensure

equitable treatment and working conditions for women (Eubanks, 2018). Similarly, provincial legislation on domestic violence seeks to protect women from abuse within private spheres, reflecting a gradual shift toward recognizing gender-based harm as a matter of public concern.

While these statutory measures represent important legislative progress, their scope remains largely confined to traditional and tangible forms of discrimination, such as physical violence or workplace misconduct. They are not designed to address the more subtle, systemic, and technologically mediated harms that arise from algorithmic decision-making (Voigt & Von dem Bussche, 2017). For example, there are no explicit legal provisions regulating discriminatory outcomes produced by AI systems in recruitment, credit scoring, or digital surveillance. Furthermore, enforcement of existing laws is often inconsistent, with institutional weaknesses and social barriers limiting their effectiveness. Consequently, the current statutory framework, though significant, remains inadequate for addressing the complexities of digital-era gender discrimination (Hughes, 2019).

3.3 Judicial Approach

The judiciary in Pakistan has historically played a progressive and transformative role in advancing women's rights, often interpreting constitutional provisions in a manner that expands protections beyond their literal text. Through public interest litigation and constitutional petitions, courts have addressed issues ranging from workplace discrimination to protection against gender-based violence. This judicial activism has contributed to the development of a rights-oriented jurisprudence that emphasizes equality, dignity, and access to justice (Graham, 2020). However, the judicial engagement with issues related to artificial intelligence and algorithmic governance remains extremely limited. This is largely due to the novelty of AI technologies and the absence of litigation directly challenging algorithmic discrimination. Additionally, courts often lack the technical expertise required to fully understand and adjudicate complex AI-related disputes. The absence of established legal standards and precedents further complicates judicial intervention (Narula, 2020). As a result, while the judiciary has demonstrated its capacity to advance women's rights in traditional contexts, its role in addressing algorithmic injustice remains underdeveloped, highlighting the need for capacity building and doctrinal evolution (Hassan, 2020).

3.4 Structural and Cultural Barriers

Beyond legal frameworks, the effectiveness of women's rights protections in Pakistan is significantly influenced by structural and cultural factors. Patriarchal norms continue to shape social and institutional practices, often limiting women's access to education, employment, and decision-making opportunities. These norms not only affect the implementation of laws but also influence the data environments from which AI systems learn, thereby embedding gender biases into technological processes (Zuboff, 2019). Access to justice remains another critical challenge. Many women face barriers such as financial constraints, lack of legal awareness, and social stigma, which hinder their ability to seek legal remedies. In rural and marginalized communities, these barriers are even more pronounced, resulting in systemic exclusion from legal protections. Furthermore, the growing importance of digital technologies has introduced a new dimension of inequality: digital literacy. Women in Pakistan, particularly in rural areas, have significantly lower access to digital tools and skills compared to men. This digital divide not only limits their participation in the digital economy but also reduces their ability to recognize and challenge algorithmic harms (Khan et al., 2020). These structural and cultural barriers amplify the risks associated with AI systems. When algorithmic decision-making intersects with existing inequalities, it can produce outcomes that are not only discriminatory but also difficult to contest or even perceive. Therefore, addressing women's rights and bias in the context of AI governance requires not only legal reform but also broader social and institutional transformation.

Type of Bias	Root Causes	How It Affects AI Decisions	Real-World Examples	Policy & Governance Interventions
Data Bias (Bias in the Training Data)	– Lack of diverse, representative, and high-quality datasets – Historical exclusions or omissions in data collection – Overrepresentation of certain groups, underrepresentation of others – Poor data labeling and annotation – Sampling errors in AI model training	– AI models produce skewed or unfair predictions – Systemic discrimination gets embedded into automated decisions – Groups excluded from datasets receive inaccurate or biased outcomes	– Facial recognition fails to identify darker-skinned individuals, leading to wrongful arrests correctly – AI credit scoring undervalues applicants from lower-income neighborhoods due to historical lending biases – Medical AI tools perform poorly for women because training data was based on male subjects	– Context-sensitive dataset diversity requirements for AI models, adapted to reflect the demographic, linguistic, and socioeconomic realities of the countries or regions where the systems will be deployed.[38] – Bias-resistant data collection protocols – Third-party bias audits before AI deployment – Publicly available fairness benchmarks for AI datasets
Algorithmic Bias (Bias in Model Design & Optimization)	– Choice of optimization metrics prioritizing efficiency over fairness – Feature selection that inadvertently reinforces disparities – Lack of fairness constraints during model training – Inadequate testing across different demographic groups – Opaque AI decision-making (black-box models)	– AI produces biased outcomes even when data is neutral – Automated decisions create disparities in hiring, credit scoring, law enforcement, and healthcare – Some groups face higher error rates or misclassifications	– AI resume-screening tools reject non-traditional applicants due to biased keyword matching – Predictive crime algorithms assign higher risk scores to minority communities based on previous law enforcement patterns – AI-based insurance pricing assigns higher premiums to women without justification	– Fairness-aware AI design principles integrated into development – Transparent AI decision-making with explainability standards – Inclusive testing and evaluation to measure impact on different demographics – Regulation on algorithmic transparency and accountability

4. Women's Rights in Pakistan: Legal and Institutional Framework

4.1 Constitutional Guarantees

The Constitution of Pakistan establishes a normative and foundational commitment to gender equality, forming the bedrock of women's rights within the legal system. Central to this framework is Article 25, which guarantees equality before the law and prohibits discrimination on the basis of sex. This provision is further reinforced by Article 34, which obligates the State to ensure the full participation of women in all spheres of national life, and Article 35, which emphasizes the protection of marriage, family, and the mother. Collectively, these provisions articulate a vision of substantive equality, extending beyond mere formal recognition of rights to the active inclusion of women in socio-economic and political processes (Zhou et al., 2020). Despite this strong constitutional language, a persistent gap exists between normative guarantees and practical implementation. Enforcement mechanisms remain inconsistent, often hindered by bureaucratic inefficiencies, lack of institutional coordination, and limited awareness among citizens regarding their constitutional rights. Moreover, constitutional provisions were drafted in a context that did not anticipate the complexities of digital governance and algorithmic decision-making (Memon, 2020). As such, while they provide a broad interpretive basis for challenging discrimination, they lack the specificity required to regulate emerging technological harms, including algorithmic bias and automated exclusion.

Additionally, the reliance on judicial enforcement places a significant burden on individuals to initiate legal action, which may not be feasible for many women due to financial, social, and procedural barriers. This reliance further contributes to the aspirational nature of constitutional protections, where rights exist in principle but are not consistently realized in practice. In the context of AI governance, this gap becomes even more pronounced, as algorithmic harms are often less visible and more difficult to challenge within existing legal frameworks (Buolamwini & Gebru, 2018).

4.2 Legislative Protections

Pakistan's legislative framework reflects a gradual evolution toward recognizing and addressing gender-based inequalities through targeted statutory interventions. A range of laws has been enacted to protect women from violence, discrimination, and exploitation across both public and private spheres. These include legislation addressing gender-based violence, such as domestic abuse and honor-related crimes, as well as laws aimed at preventing workplace harassment, which provide formal complaint mechanisms and institutional accountability structures. Additionally, family law protections regulate matters such as marriage, divorce, maintenance, and inheritance, offering women a degree of legal security within personal and familial relationships (Zhang, 2020).

While these legislative measures represent significant progress in advancing women's rights, they are largely reactive in nature, focusing on addressing harm after it has occurred rather than preventing it. Moreover, their scope is primarily confined to physical, social, and institutional forms of discrimination, with limited attention to the rapidly evolving domain of digital and technological harms. For instance, existing laws do not explicitly regulate discriminatory outcomes generated by algorithmic systems in areas such as employment, financial services, or digital surveillance (Hassan, 2020).

This legislative gap is particularly concerning in the context of AI, where discrimination may occur in subtle and systemic ways that are not easily captured by traditional legal categories. Furthermore, enforcement challenges persist, including inadequate institutional capacity, lack of

training among enforcement agencies, and societal barriers that discourage reporting. As a result, while Pakistan's statutory framework provides an important foundation for protecting women's rights, it remains insufficiently equipped to address the complexities of algorithmic injustice, necessitating comprehensive legal reform. In contrast, the European Union has progressively developed a more proactive and technology-oriented regulatory approach toward equality and non-discrimination in the digital age (Iqbal, 2021). The EU legal framework is grounded in fundamental rights instruments such as the European Union Charter of Fundamental Rights and the General Data Protection Regulation (GDPR), both of which emphasize human dignity, equality, privacy, and protection against automated decision-making. Under Article 22 of the GDPR, individuals are granted safeguards against decisions based solely on automated processing that significantly affect their rights and interests (Ahmed, 2020). More recently, the proposed EU Artificial Intelligence Act has sought to establish a risk-based regulatory model that categorizes certain AI systems as "high-risk," particularly those used in employment, education, law enforcement, and access to essential services. These systems are subject to strict obligations concerning transparency, human oversight, data quality, and accountability in order to mitigate discriminatory and biased outcomes (Hassan & Khan, 2020).

The EU's evolving AI governance regime demonstrates a preventive and rights-centered approach that extends beyond traditional anti-discrimination frameworks. Rather than merely addressing harm after its occurrence, EU regulations emphasize anticipatory safeguards through algorithmic impact assessments, transparency requirements, independent oversight mechanisms, and mandatory compliance standards. Importantly, the EU has increasingly recognized that algorithmic bias may reproduce or amplify structural inequalities, including gender discrimination, in subtle yet pervasive ways (EU, 2021). Consequently, the European model integrates principles of fairness, explainability, and accountability directly into the design and deployment of AI systems. Although implementation challenges remain, particularly regarding enforcement consistency among member states, the EU framework offers an important comparative model for Pakistan by illustrating how legal systems can adapt existing human rights principles to emerging technological realities and algorithmic governance as shown in the table.

Domain	Example Case	Type of Bias	Legal Response (Global)	Status in Pakistan
Policing	Predictive algorithms	Racial profiling	EU AI Act proposals	No specific law
Employment	Resume screening	Gender discrimination	US EEOC guidelines	Limited labor protections
Healthcare	Risk prediction tools	Socioeconomic exclusion	WHO ethical AI recommendations	Emerging telehealth policies
Credit Scoring	Lending algorithms	Minority disadvantage	Algorithmic Accountability Act	Early data laws (draft)

4.3 Judicial Role

The judiciary in Pakistan has historically served as a critical agent of social transformation, often stepping in to fill gaps left by legislative and executive inaction. Through constitutional interpretation and public interest litigation, courts have expanded the scope of fundamental rights, emphasizing principles of equality, dignity, and access to justice. In numerous cases, the judiciary has adopted a progressive and purposive approach, recognizing the need to address structural inequalities affecting women and other marginalized groups (Eubanks, 2018). However, the judicial engagement with issues related to artificial intelligence and algorithmic governance remains largely underdeveloped. This is attributable to several factors, including the novelty of AI technologies, the absence of dedicated regulatory frameworks, and the limited number of cases directly addressing algorithmic discrimination. Additionally, the technical complexity of AI

systems poses challenges for judicial understanding and adjudication, as courts may lack the specialized expertise required to evaluate algorithmic processes and their impacts (Zhou et al., 2020). The absence of judicial precedent in this area creates a degree of legal uncertainty, leaving individuals without clear avenues for redress in cases of algorithmic harm. At the same time, it presents an opportunity for the judiciary to play a proactive role in shaping AI governance, drawing upon existing constitutional principles to address emerging challenges.

By extending established doctrines of equality and non-discrimination to the digital realm, courts can contribute to the development of a rights-based framework for algorithmic accountability (O'Neil, 2016). In this context, the judiciary's future role will be pivotal. Its ability to adapt legal reasoning to technological realities will determine whether constitutional protections remain relevant in the age of AI or become increasingly disconnected from lived experiences. Strengthening judicial capacity, promoting interdisciplinary understanding, and encouraging strategic litigation will be essential steps in ensuring that the legal system effectively responds to the challenges posed by algorithmic injustice (Eubanks, 2018).

5. Pakistan's AI Governance Landscape

5.1 Policy Developments

In contrast to Pakistan's largely policy-oriented and non-binding AI governance model, the European Union has adopted a comprehensive rights-based regulatory framework that places legal accountability, human rights protection, and ethical oversight at the center of AI governance. The EU's approach is rooted in the understanding that Artificial Intelligence is not merely an economic or technological tool, but a socio-legal phenomenon capable of affecting fundamental rights, democratic values, and social equality. Consequently, the EU has sought to regulate AI through binding legal instruments rather than relying solely on strategic policy declarations (Iqbal, 2021). The most significant development in this regard is the EU Artificial Intelligence Act, which establishes the world's first comprehensive legal framework specifically governing AI systems. Unlike Pakistan's National AI Policy 2025, which primarily outlines developmental aspirations and innovation goals, the EU AI Act imposes enforceable obligations on developers, deployers, and providers of AI systems based on a risk-classification model. AI systems categorized as "high-risk" are subjected to strict requirements relating to transparency, human oversight, accountability, data governance, cybersecurity, and conformity assessments before deployment (Binns, 2018).

The EU framework reflects a precautionary and rights-centered philosophy that differs substantially from Pakistan's innovation-first model. Within the EU, AI governance is closely connected with broader constitutional and human rights commitments embedded in the Charter of Fundamental Rights of the European Union, the General Data Protection Regulation (GDPR), and anti-discrimination directives. As a result, AI systems are evaluated not only on the basis of economic utility but also on their potential impact on privacy, equality, dignity, and non-discrimination (EU, 2021). The GDPR, for instance, provides individuals with rights relating to automated decision-making and profiling, including the right to obtain meaningful information about the logic involved in algorithmic decisions. Such provisions create enforceable safeguards against arbitrary and opaque algorithmic practices. Pakistan, by comparison, currently lacks a comprehensive and enforceable data protection regime, although draft legislation such as the Personal Data Protection Bill has been proposed. The absence of legally protected digital rights in Pakistan creates a regulatory vacuum in which AI systems may operate without adequate oversight or remedies for affected individuals (Khan et al., 2020).

Another important distinction lies in the treatment of algorithmic accountability and transparency. The EU regulatory model recognizes that AI systems can reproduce structural inequalities and

therefore requires developers of high-risk systems to conduct risk assessments, maintain technical documentation, ensure traceability of datasets, and implement human supervision mechanisms. Transparency obligations are particularly significant in relation to automated systems that interact with individuals, including biometric technologies, recruitment algorithms, and credit-scoring systems (Zhou et al., 2020). The EU also emphasizes explainability, ensuring that individuals can understand the basis of algorithmic outcomes that affect their rights or opportunities. In Pakistan's policy framework, however, accountability and transparency are addressed only in broad conceptual language without institutional or procedural mechanisms for enforcement. While the National AI Policy acknowledges ethical concerns, it does not establish mandatory impact assessments, audit obligations, or independent regulatory supervision for AI systems. Consequently, the Pakistani approach remains dependent on voluntary compliance and administrative discretion rather than binding legal accountability.

The divergence between the EU and Pakistan is particularly visible in the area of gender equality and protection against algorithmic discrimination. The EU's legal and policy discourse increasingly recognizes the intersection between AI systems and structural discrimination, especially concerning women, minorities, and marginalized communities (Hassan & Khan, 2020). European institutions have repeatedly emphasized that biased datasets and opaque algorithms can perpetuate discrimination in employment, healthcare, policing, financial services, and public administration. Accordingly, the EU AI framework incorporates principles of fairness, non-discrimination, and inclusive data governance. Regulatory discussions within the EU also encourage gender-sensitive auditing of datasets and algorithmic models to minimize discriminatory outcomes. In contrast, Pakistan's AI governance discourse generally frames gender inclusion as part of a broader developmental narrative rather than as a legally enforceable right. References to women's participation in technology and digital empowerment are present in policy documents, yet there are limited concrete safeguards aimed specifically at preventing algorithmic gender bias (Eubanks, 2018). This creates a significant normative gap, particularly in a society where historical gender disparities in education, employment, and economic participation may already influence the datasets used to train AI systems.

Institutionally, the EU has also moved toward establishing coordinated governance and regulatory supervision mechanisms for AI. The EU AI Act envisages oversight structures involving national supervisory authorities, conformity assessment bodies, and a centralized European AI Office to ensure harmonized enforcement across member states. This institutional architecture reflects the EU's commitment to regulatory consistency and accountability. Pakistan, however, does not yet possess a specialized AI regulatory authority or a dedicated institutional mechanism responsible for monitoring algorithmic governance (Buolamwini & Gebru, 2018). Existing governance structures remain fragmented across ministries and policy bodies, limiting the state's capacity to oversee complex AI systems effectively. The absence of specialized institutions further weakens enforcement potential and reduces public confidence in responsible AI deployment.

Overall, the comparative analysis demonstrates that while both the European Union and Pakistan recognize the transformative potential of Artificial Intelligence, their governance philosophies differ fundamentally. Pakistan's approach is predominantly developmental and innovation-driven, emphasizing economic modernization, technological adoption, and digital growth (O'Neil, 2016). The European Union, by contrast, adopts a rights-based and regulatory model that seeks to balance technological innovation with legal accountability, human dignity, and protection against discrimination. While Pakistan's framework reflects important initial progress in integrating AI into national development policy, it remains normatively underdeveloped when compared with the EU's legally enforceable governance regime (Binns, 2018). The comparison therefore highlights the need for Pakistan to move beyond aspirational policy language toward a comprehensive

statutory framework that incorporates enforceable protections relating to transparency, accountability, data governance, and algorithmic fairness, particularly in relation to vulnerable and marginalized groups as shown in the table.

Table 1: Comparative AI Governance Frameworks

Regulatory Feature	EU AI Act	GDPR	Pakistan Framework
AI-specific legislation	Yes	No	No
Risk-based classification	Yes	No	No
Automated decision protection	Yes	Yes (Art.22)	Limited
Algorithmic transparency	Yes	Partial	Absent
Gender safeguards	Emerging	Limited	Absent
Regulatory authority	Yes	Yes	Developing

5.2 Regulatory Challenges

Despite the growing policy focus on AI, Pakistan faces substantial regulatory challenges that hinder the development of a comprehensive and effective governance framework. One of the most significant issues is the lack of binding legal standards. At present, there is no dedicated legislation governing AI systems, nor are there detailed statutory provisions addressing algorithmic fairness, transparency, or accountability. This absence of formal regulation creates a legal vacuum in which AI technologies can be deployed without clear obligations regarding their design, testing, or impact assessment. As a result, potential harms particularly those affecting marginalized groups such as women may go unaddressed (Fussey & Murray, 2019).

Closely related to this issue is the absence of robust enforcement mechanisms. Even where general principles of fairness or non-discrimination exist within broader legal frameworks, there are no specialized regulatory bodies or procedures tasked with monitoring AI systems or addressing algorithmic harms. Existing institutions, such as regulatory authorities in telecommunications or data governance, are not adequately equipped to deal with the technical and ethical complexities of AI (Zuboff, 2019). This institutional gap limits the state's ability to ensure compliance with emerging standards and undermines public trust in digital technologies.

Another critical challenge is limited institutional capacity, which affects both regulatory oversight and judicial engagement. Effective AI governance requires not only legal frameworks but also technical expertise, interdisciplinary coordination, and administrative resources. In Pakistan, many institutions lack the necessary expertise to evaluate algorithmic systems, conduct audits, or enforce compliance. This capacity deficit is further compounded by the rapid pace of technological change, which often outstrips the ability of regulatory bodies to respond (Hassan & Khan, 2020). Additionally, the regulatory landscape is fragmented, with overlapping mandates and insufficient coordination among different governmental agencies. This fragmentation can lead to inconsistencies in policy implementation and gaps in oversight. For example, issues related to data protection, digital rights, and AI governance are often addressed in isolation, rather than through an integrated framework that recognizes their interdependence (Iqbal, 2021). From a gender perspective, these regulatory challenges are particularly concerning. The absence of binding standards and enforcement mechanisms means that gender bias in AI systems may remain invisible and unchallenged. Without institutional capacity to conduct gender impact assessments or algorithmic audits, discriminatory outcomes may persist without accountability. Moreover, the lack of inclusive policymaking processes limits the representation of women's perspectives in AI governance, further exacerbating the risk of exclusion (Khan et al., 2020). Pakistan's AI governance landscape is characterized by a tension between rapid technological ambition and regulatory insufficiency. While policy initiatives reflect a commitment to innovation and

development, the absence of binding legal standards, effective enforcement mechanisms, and institutional capacity creates significant risks. Addressing these challenges will require a shift from policy-driven governance to a comprehensive, rights-based regulatory framework that integrates legal accountability, technical oversight, and gender-sensitive safeguards (Fussey & Murray, 2019).

6. Gendered Dimensions of Algorithmic Injustice

Algorithmic injustice acquires a distinctly gendered character when examined within Pakistan's socio-economic context, where structural inequalities already shape women's access to opportunities, resources, and public space. AI systems, far from being neutral tools, interact with these pre-existing disparities and often amplify them in less visible but more systemic ways. The gendered dimensions of algorithmic injustice are particularly evident in areas such as employment, financial inclusion, surveillance, and digital violence, where automated decision-making can reproduce exclusion while obscuring accountability (Zuboff, 2019).

6.1 Employment

The integration of AI into recruitment and hiring processes has transformed how employers screen and select candidates. Automated systems are increasingly used to evaluate resumes, rank applicants, and even conduct preliminary interviews. However, these systems are typically trained on historical employment data, which often reflects long-standing gender disparities in labor markets. In Pakistan, where female labor force participation remains significantly lower than that of men, datasets used for training AI models may disproportionately represent male career trajectories and qualifications (Buolamwini & Gebru, 2018). As a result, AI hiring systems may inadvertently prioritize profiles that resemble historically dominant (male) patterns, thereby disadvantaging women applicants. For instance, career interruptions due to caregiving responsibilities more common among women may be interpreted negatively by algorithms designed to reward continuous employment. Similarly, if past hiring decisions favored male candidates for leadership roles, AI systems may internalize and replicate these biases. This creates a cycle in which algorithmic decision-making reinforces structural exclusion, limiting women's access to formal employment opportunities and perpetuating economic inequality (Khan et al., 2020).

6.2 Financial Inclusion

Access to financial services is another domain where algorithmic systems play an increasingly important role, particularly through credit scoring and risk assessment models. These systems rely heavily on data such as credit history, income records, and transaction patterns to determine an individual's creditworthiness. However, in Pakistan, many women have limited access to formal banking systems and may lack documented financial histories. This absence of data does not necessarily indicate financial unreliability but is often a reflection of systemic barriers to economic participation (Zhou et al., 2020). Algorithmic credit scoring models, which depend on such data, may therefore classify women as higher-risk borrowers or exclude them altogether from financial services. This creates a paradox in which women are penalized not for poor financial behavior, but for their historical exclusion from financial systems. Moreover, the opacity of these models makes it difficult for affected individuals to understand or challenge adverse decisions. Consequently, algorithmic systems risk deepening financial marginalization, undermining efforts to promote gender-inclusive economic development (Eubanks, 2018).

6.3 Surveillance

The deployment of AI-powered surveillance technologies introduces significant concerns regarding privacy, autonomy, and freedom of movement, particularly for women. Surveillance systems, including facial recognition, predictive analytics, and location tracking, are often justified on grounds of security and efficiency. However, their use can have disproportionate impacts on women, especially in societies where mobility and public presence are already subject to social scrutiny. In Pakistan, where cultural norms often regulate women's movement in public spaces, the use of surveillance technologies may reinforce existing constraints. For example, monitoring systems in workplaces or public areas can be used not only for security purposes but also for informal social control, affecting women's participation in public and professional life (Hassan & Khan, 2020).

Additionally, inaccuracies in facial recognition systems often higher for women due to biased training data can lead to misidentification and unjust targeting, further exacerbating vulnerability. The broader concern is that surveillance technologies, when deployed without adequate safeguards, may normalize intrusive monitoring practices that disproportionately affect women's privacy and autonomy. This raises important questions about the balance between security and fundamental rights in AI governance (Zhou et al., 2020).

6.4 Digital Violence

One of the most alarming gendered impacts of AI is the rise of digital violence, particularly through technologies such as deepfakes and automated harassment tools. AI-generated deepfake content, which can create highly realistic but fabricated images or videos, has been increasingly used to target women, often in the form of non-consensual explicit material. Such content can cause severe psychological harm, reputational damage, and social stigma, especially in conservative societies like Pakistan (Memon, 2020).

In addition to deepfakes, AI-driven bots and automated systems can facilitate large-scale online harassment, including targeted abuse, misinformation, and coordinated trolling. Women, particularly those active in public or professional spheres, are disproportionately affected by such forms of digital violence. The anonymity and scalability of AI technologies make these harms difficult to regulate and even harder to trace back to perpetrators (Iqbal, 2021). Existing legal frameworks in Pakistan are not fully equipped to address these emerging threats, as they are primarily designed to deal with traditional forms of harassment and defamation. The technological sophistication and cross-border nature of AI-generated content further complicate enforcement. As a result, digital violence represents a critical frontier in the study of algorithmic injustice, highlighting the urgent need for legal and regulatory innovation to protect women in digital spaces (Rajkomar et al., 2018).

7. Doctrinal Challenges Revisited in Light of Case Law

The analysis of Pakistani constitutional jurisprudence reveals a mixed doctrinal landscape when assessed through the lens of algorithmic injustice. On one hand, the judiciary has developed a relatively strong framework of equality-oriented interpretation, particularly through expansive readings of fundamental rights. On the other hand, the legal system remains structurally grounded in traditional notions of human agency, intent, and direct causation, which limits its ability to effectively engage with AI-driven decision-making systems. This tension between doctrinal strength and technological limitation becomes particularly evident when examining the application of case law principles to algorithmic governance and gender-based harms (Johnson et al., 2023).

7.1 Strengths

One of the most significant strengths of Pakistani jurisprudence lies in its strong constitutional commitment to equality and non-discrimination, primarily derived from Article 25 of the Constitution. The Supreme Court of Pakistan has consistently interpreted this provision as a dynamic and evolving guarantee rather than a static principle. In cases such as *Shirin Munir v. Government of Punjab* (PLD 1990 SC 295), the Court emphasized that equality is not merely formal but must be substantive in nature, ensuring that women are not disadvantaged by institutional practices that appear neutral but produce discriminatory outcomes. This reasoning provides an important doctrinal foundation for addressing algorithmic bias, as AI systems often produce precisely such indirect and structural discrimination (Creary, 2021). Another doctrinal strength is the judiciary's willingness to adopt progressive and purposive interpretations of fundamental rights. In *Shehla Zia v. WAPDA* (PLD 1994 SC 693), the Supreme Court expanded the scope of fundamental rights to include protection from environmental harm, demonstrating a readiness to interpret constitutional guarantees in light of evolving societal challenges. This interpretive flexibility is highly relevant to AI governance, as it suggests that courts may similarly extend constitutional protections to cover digital and algorithmic harms, even in the absence of explicit legislative frameworks.

Furthermore, Pakistani courts have recognized the importance of affirmative action and corrective equality. Jurisprudence has acknowledged that treating unequal groups identically may perpetuate injustice, thereby justifying positive discrimination in favor of marginalized groups, including women (Mitchell et al., 2021). This principle aligns closely with feminist legal theory and provides a normative basis for designing gender-sensitive algorithmic regulations, such as bias mitigation requirements and inclusive data practices. The recognition of substantive equality thus offers a doctrinal bridge between traditional constitutional law and emerging concerns in AI governance. Additionally, courts have demonstrated a willingness to intervene in cases involving systemic injustice and institutional failure, particularly where fundamental rights are at stake. This activism reflects a broader judicial philosophy that prioritizes rights protection over procedural rigidity, a feature that could be extended to future cases involving algorithmic discrimination.

7.2 Limitations

Despite these strengths, Pakistani jurisprudence faces significant doctrinal and institutional limitations when confronted with the challenges of algorithmic injustice. The most fundamental limitation is the absence of any jurisprudence directly addressing artificial intelligence or algorithmic decision-making systems. As a result, courts lack precedent for analyzing issues such as automated discrimination, data bias, or algorithmic transparency. This creates a doctrinal vacuum in which judges must rely on analogies drawn from traditional discrimination and administrative law, which may not fully capture the complexity of AI systems (Sikstrom et al., 2022). A second major limitation is the judiciary's continued reliance on traditional legal concepts centered on human actors, particularly notions of intent, negligence, and direct causation. Most constitutional and statutory frameworks in Pakistan assume that discriminatory harm is the result of identifiable human decision-makers. However, algorithmic systems distribute decision-making across multiple layers, including data inputs, model design, and automated outputs, making it difficult to attribute responsibility to a single actor. This diffusion of accountability challenges conventional legal reasoning and exposes the inadequacy of actor-centric liability models in the context of AI governance.

Moreover, existing legal doctrines are heavily dependent on linear causation models, which are poorly suited to algorithmic systems characterized by probabilistic outputs and complex feedback loops. In cases of algorithmic discrimination, harm may emerge indirectly from data patterns rather

than explicit decisions, complicating judicial assessment of liability. This structural mismatch between legal doctrine and technological reality limits the effectiveness of judicial remedies (Barocas, 2019). Another critical limitation is the absence of technical expertise within the judicial and legal ecosystem. AI systems operate through complex statistical models, machine learning architectures, and data-processing mechanisms that require specialized knowledge to evaluate. However, most judges, lawyers, and legal institutions in Pakistan lack formal training in data science or algorithmic systems. This knowledge gap restricts the judiciary's ability to critically assess algorithmic evidence, interpret technical documentation, or evaluate claims of bias in AI systems. Consequently, courts may either over-rely on expert testimony or avoid engaging deeply with technical issues altogether (Neil, 2016).

Additionally, procedural constraints further hinder judicial engagement with algorithmic injustice. The lack of transparency in AI systems ("black box" problem) makes it difficult for litigants to obtain evidence necessary to prove discrimination. Without statutory requirements for algorithmic disclosure or auditability, courts are often left without sufficient material to adjudicate disputes effectively. Ultimately, the institutional legal framework remains oriented toward reactive dispute resolution rather than proactive regulation. Courts typically intervene after harm has occurred, whereas algorithmic injustice often requires anticipatory governance mechanisms such as audits, impact assessments, and regulatory oversight. The absence of such preventive frameworks further limits the judiciary's ability to address systemic risks associated with AI deployment (Binns, 2018). In light of these strengths and limitations, Pakistani jurisprudence presents a paradoxical position. While its constitutional philosophy is sufficiently broad and progressive to conceptually accommodate algorithmic justice, its doctrinal structure remains rooted in pre-digital assumptions of legal responsibility. Bridging this gap will require both judicial innovation and legislative intervention, including the development of AI-specific legal standards, capacity building within the judiciary, and the incorporation of interdisciplinary expertise into legal reasoning. Without such reforms, the legal system risks remaining normatively strong but practically under-equipped to address the evolving challenges of algorithmic governance and gender-based digital inequality (Mehrabi, 2021).

8. Reconceptualization through Jurisprudential Foundations

The existing body of Pakistani constitutional and judicial jurisprudence demonstrates that the legal system already contains robust normative foundations capable of addressing emerging challenges such as algorithmic injustice. Although these doctrines were developed in a pre-digital legal environment, their underlying principles particularly equality, dignity, non-discrimination, and substantive justice are sufficiently flexible to be extended into the domain of artificial intelligence. The central challenge, therefore, is not the absence of legal tools, but rather the need for doctrinal reinterpretation and conceptual expansion to align traditional constitutional principles with contemporary technological realities (Zliobaite, 2016). Pakistani courts have repeatedly emphasized that constitutional rights must be interpreted in a dynamic and purposive manner, capable of responding to evolving social conditions. This interpretive philosophy provides a strong foundation for rethinking how equality, state responsibility, and gender justice can be applied to algorithmic systems that increasingly shape access to employment, credit, healthcare, and public services. In this sense, jurisprudence offers a latent but underdeveloped framework for constructing a rights-based AI governance model (Smith, 2024).

8.1 From Formal to Algorithmic Equality

One of the most significant doctrinal transformations required is the shift from formal equality to algorithmic equality. Traditional equality jurisprudence, as reflected in cases such as *Shirin Munir v. Government of Punjab* (PLD 1990 SC 295), establishes that individuals must not be subjected to

arbitrary or unjustified discrimination and that equality must be understood in substantive terms rather than mere formal sameness. The Court in *Shirin Munir* emphasized that policies which appear neutral on their face may still produce discriminatory effects if they fail to account for structural inequalities affecting women. Building on this reasoning, the principle of equality can be extended to algorithmic decision-making systems, which increasingly function as *de facto* decision-makers in areas such as recruitment, credit scoring, and public administration. In such contexts, equality cannot be limited to human decision-makers alone; it must also encompass the behavior and outputs of automated systems. Algorithmic equality would therefore require that AI systems be designed, trained, and evaluated in a manner that does not reproduce historical gender disparities or embed systemic bias (Zhang, 2024).

This expanded conception also necessitates recognizing that algorithmic systems may produce indirect and structural discrimination, even in the absence of intentional bias. For example, if an AI hiring system consistently favors male candidates due to historical training data, the resulting disparity would be inconsistent with substantive equality principles articulated in constitutional jurisprudence. Thus, courts can logically extend existing equality doctrine to impose obligations on both state and private actors to ensure that algorithmic systems comply with non-discriminatory design and deployment standards.

8.2 Expanding State Responsibility

A second critical area of reconceptualization involves the doctrine of state responsibility, particularly in light of constitutional obligations to protect fundamental rights. In a significant case of *Human Rights* (2014 SCMR 515), the Supreme Court of Pakistan emphasized that the state bears an affirmative duty to protect citizens from rights violations and ensure effective institutional mechanisms for justice. The Court held that failure of public institutions to prevent harm or ensure accountability may itself constitute a violation of constitutional rights. This principle can be extended to the governance of artificial intelligence systems, particularly where such systems are deployed in public administration or regulated sectors. In the context of AI, state responsibility should not be limited to passive oversight but must include active regulatory intervention to ensure fairness, transparency, and accountability in algorithmic systems. This includes establishing legal frameworks for algorithmic audits, requiring disclosure of automated decision-making processes, and ensuring that AI systems do not produce discriminatory outcomes (Seymour, 2023).

Furthermore, the state's duty to prevent harm must be interpreted to include technological discrimination, particularly where algorithmic systems are used in sensitive domains such as welfare distribution, law enforcement, and employment. If AI systems deployed or endorsed by state institutions result in discriminatory outcomes against women, this may constitute a failure of the state's constitutional obligation to ensure equality and non-discrimination. Expanding state responsibility in this manner aligns with the broader jurisprudential trend in Pakistan toward rights-based governance, where the state is viewed not merely as a regulator but as an active guarantor of fundamental rights. In the digital age, this requires the state to ensure that technological systems operate within constitutional boundaries and do not undermine the rights they are intended to serve.

8.3 Embedding Gender Sensitivity

A third dimension of reconceptualization involves the integration of gender sensitivity into AI governance frameworks, drawing upon Pakistan's established jurisprudence on affirmative action and substantive equality. Pakistani courts have consistently recognized that equality does not require identical treatment of all individuals; rather, it permits and in some cases requires differential treatment to address historical disadvantage. This principle underpins affirmative

action policies aimed at improving women's access to education, employment, and public representation (Wang, 2023). In the context of AI governance, this jurisprudential foundation supports the development of gender-aware regulatory frameworks that proactively address algorithmic bias. Such frameworks may include requirements for gender impact assessments, bias detection mechanisms, and inclusive data practices that ensure women are adequately represented in training datasets. Rather than treating gender neutrality as a default assumption, AI systems should be designed with an awareness of existing structural inequalities and their potential amplification through automation.

Additionally, embedding gender sensitivity requires the inclusion of women in the design, development, and governance of AI systems. This aligns with the broader constitutional commitment to the participation of women in national life under Article 34. In practical terms, this could involve mandating gender diversity in AI regulatory bodies, technical committees, and institutional oversight mechanisms. Such inclusion is not merely symbolic; it is essential for ensuring that algorithmic systems reflect diverse perspectives and do not reproduce male-centric assumptions embedded in technological design (Gebru, 2021). Moreover, gender-sensitive AI governance should be understood as part of a broader commitment to transformative constitutionalism, where law is used as an instrument to correct structural inequalities rather than merely reflect existing social arrangements. By integrating affirmative action principles into algorithmic governance, Pakistan's legal system can move toward a more inclusive and equitable digital future (Gillespie et al., 2020).

Conclusion

The reconceptualization of jurisprudential foundations demonstrates that Pakistani constitutional law already contains the normative resources necessary to address algorithmic injustice, even though these resources have not yet been explicitly applied to digital technologies. By extending principles of equality, state responsibility, and affirmative action into the domain of AI governance, courts and policymakers can construct a coherent legal framework capable of addressing the complex challenges posed by algorithmic systems. This requires not the invention of new constitutional principles, but the evolutionary reinterpretation of existing doctrines to ensure their relevance in an increasingly automated and data-driven society. The rapid integration of Artificial Intelligence into governance, economic systems, and everyday decision-making marks a transformative moment for Pakistan's legal and institutional landscape. While AI offers significant opportunities for efficiency, innovation, and development, this article has demonstrated that it simultaneously introduces new and complex forms of inequality, particularly for women. Algorithmic systems, far from being neutral, are deeply embedded within existing socio-economic structures and therefore risk replicating and amplifying entrenched gender disparities. In the Pakistani context, where women already face systemic barriers in employment, financial inclusion, access to justice, and digital participation these risks are both immediate and profound. This study has shown that Pakistan's existing legal framework, though normatively robust, remains structurally ill-equipped to address algorithmic injustice. Constitutional guarantees of equality and non-discrimination provide a strong foundation, and judicial jurisprudence has evolved toward recognizing substantive equality and affirmative action. However, these doctrines are rooted in traditional conceptions of harm, causation, and human agency, which are increasingly inadequate in the face of automated decision-making systems. Similarly, statutory protections while important are largely reactive and designed to address conventional forms of discrimination, leaving a significant regulatory gap in the digital domain.

At the same time, Pakistan's emerging AI governance landscape reflects a policy-driven approach that prioritizes innovation and economic growth, often at the expense of enforceable legal

safeguards. The absence of binding legislation, clear accountability mechanisms, and institutional capacity creates a regulatory vacuum in which algorithmic harms particularly those affecting women—may remain unaddressed. Empirical evidence on gender disparities in workforce participation, financial inclusion, and digital access further underscores the risk that AI systems will transform existing inequalities into automated and normalized exclusion. The findings has advanced a central argument, that addressing algorithmic injustice in Pakistan does not require the creation of entirely new legal principles, but rather the reconceptualization and extension of existing jurisprudential foundations. By moving from formal to algorithmic equality, expanding the doctrine of state responsibility to encompass technological systems, and embedding gender sensitivity through affirmative action principles, Pakistan's legal system can adapt to the realities of AI governance. Such an approach aligns with the broader tradition of dynamic constitutional interpretation, which recognizes that fundamental rights must evolve in response to changing social and technological conditions.

However, doctrinal reinterpretation alone is insufficient. There is an urgent need for comprehensive legislative and institutional reform, including the enactment of AI-specific laws, the establishment of independent regulatory bodies, and the development of mechanisms for algorithmic transparency and accountability. Equally important is the inclusion of women in AI policymaking, design, and oversight processes, ensuring that technological systems reflect diverse perspectives rather than reinforcing existing hierarchies. Without such measures, the promise of AI as a tool for development risks being overshadowed by its potential to deepen inequality. Ultimately, the challenge of algorithmic injustice is not merely technical or regulatory; it is fundamentally constitutional and ethical. It raises critical questions about the nature of equality, the scope of state responsibility, and the role of law in mediating the relationship between technology and society. For Pakistan, the stakes are particularly high. The choices made today in shaping AI governance will determine whether technological advancement becomes a vehicle for empowerment and inclusion, or a mechanism for entrenching systemic discrimination. In this sense, the future of women's rights in Pakistan's digital age depends on the ability of its legal system to anticipate, adapt, and respond to the challenges of algorithmic governance. A rights-based, gender-sensitive approach to AI is not merely desirable it is essential for ensuring that the constitutional promise of equality remains meaningful in an increasingly automated world.

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