

The Impact of Artificial Intelligence on Data Protection Laws in Pakistan. A Critical Analysis

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ABSTRACT

The legal framework within Pakistan lacks a specific comprehensive data protection legislation and instead depends on Prevention of Electronic Crimes Act (PECA) 2016, which takes more of a cybercrime approach. At the same time, there is investment in Artificial Intelligence technologies and their innovation at a government level, which encourages their adoption across various domains. Such interfaces propose overlaps and conflicts challenge the deeply interwoven nature of AI's sophisticated algorithms alongside its data-intensive character and fundamental data protection principles that are feebly placed within law. There is a legislative gap regarding data protection which increases vulnerability to emerging AI technologies. The data protection offered by PECA is fixated on cybercrimes which means there is no pro-active shielding for personal data. With Pakistan actively adopting AI technologies, there is a need for flexible data protection policies ensuring the responsible use of data and ethics in AI systems. The features inherently associated with AI, such as the claim of requiring an extensive amount of data and hypothesized sophisticated algorithms, fundamentally lacking proper data protection within existing legislation poses a danger. This research critically examines the effect of AI on Pakistan's current legal framework of data protection, determines gaps and shortcomings in the current legal system, investigates perspective of legislative experts, policymakers, and technologist, and recommends enforcing or re-legislating data protection laws according to global benchmarks.

Keywords: Artificial Intelligence (AI), Data Protection, Prevention of Electronic Crimes Act (PECA), Personal Data Protection Bill (PDPB), General Data Protection Regulation (GDPR).

INTRODUCTION

The emergence of data protection and artificial intelligence as current international issues illustrates the modern global system (Mirza A. A. 2025). Artificial intelligence is expanding so rapidly across sectors and populations that authorities will soon be forced to consider its ethical and legal consequences (Amna Khan 2024). Simultaneously, data protection is recognized as a human right in far too many digital arenas, with much too much legislative action taken worldwide, which includes General Data Protection Regulation (GDPR) of Europe, to construct regulatory frameworks based on need (Ana Mishova 2024). As a result, such worldwide progress point to a society with complex linkages between the usage of AI and the ability to protect personal data (Tom Dunlap 2023).

As for Pakistan, the current legal framework for data protection is in a nascent stage. There is currently no personal data protection law comparable to international ones like GDPR and CCPA (Yousaf A. K. 2025).

The chief legal framework dealing with data protection and privacy in Pakistan is the Prevention of Electronic Crimes Act (PECA) which was enacted in 2016(*DLA Piper 2025*). While PECA attempts to deal with some aspects of cybercrime and hacking, it certainly neglects a holistic framework for data protection. Recently, there have been proposals for a Personal Data Protection Bill (PDPB) 2023 aimed at enriching data protection laws in Pakistan but it has yet to be implemented (*DLA Piper 2025*). Furthermore, the Constitution of Pakistan does guarantee the right to privacy which provides some fundamental basis for his or her data protection. This combination of an outdated cybercrime law and a draft data protection bill indicates the slow pace of development which is likely to fall short of the advances in AI technologies (*Saifullah K. & Saeed H. K. 2025*).

On the contrary, Pakistan shows an increasing emergence of AI technologies. The government, academia and the startup ecosystem are incentivizing the adoption and use of AI technologies in multiple domains (*Owais A. G. & Fizza K. 2025*). The Digital Nation Pakistan Act of 2024 and the 2023 draft AI Policy are examples of efforts aimed at exploiting the potential of AI technologies for advancing socioeconomic development. AI applications and implementations are being researched and developed in important sectors like healthcare, finance, governance, education, and agriculture which shows the determination of the country to use that technology. This ambitious drive for AI adoption presents significant opportunities for progress while simultaneously highlighting the risk to data privacy in the absence of sufficient legal and regulatory instruments (*Robin A. 2022*).

The issue this paper tackles is the problematic facets and implications of artificial intelligence for the existing data protection laws in Pakistan. The data-intensive nature and algorithmically complex nature of AI has the potential to violate some of key principles of data protection; consent, transparency, purpose limitation, and data minimization, affording none of them adequate scope within the growing legal framework in Pakistan (*Javier C. L. 2024*). This analysis is important because it sheds light on the possible gaps in the legal structure and the policies that need to be formulated to address them. In this research paper focuses on the legal and policy issues concerning the application of AI in Pakistan and the resulting consequences for data protection. The aims of this study are to evaluate the challenges and effects that artificial intelligence poses on data protection laws in Pakistan critically, assess the absence of biases and shortcomings in the relevant AI and robotic technologies legislation, evaluate opinions of other legal practitioners, non-legal policymakers, and technology specialists about the possibilities of adapting or restructuring the existing data protection policies pertaining to AI technologies, and determine what international standards or legal frameworks for data protection should be adopted by Pakistan in the context of artificial intelligence(*Heather Dunn Navarro 2024*).

Research Questions

These exclusive and specific questions will be explored in this on-case research paper:

1. In what ways do the current data protection laws in Pakistan consider the problems AI technologies present?
2. What is the scope of the current inadequacies in the legal framework on AI and its applications in Pakistan?
3. What do the legal academics, policymakers, and other experts in technology in Pakistan say about the adequacy of the existing data protection laws relative to AI and the need for change?
4. Which international legal best practices or models might assist in formulating more effective data protection laws for Pakistan in the context of AI?

LITERATURE REVIEW

Given that the chief focus of PECA is on problems like hacking, cyberterrorism, and unauthorized system access, Pakistan's distant on controlling the employment of AI technologies is justified. The lack of legislation addressing data privacy, algorithm accountability, or AI regulation reflects a larger concern that technological advancements are going beyond legal frameworks. Noorani asserts how PECA's declared threats do not protect against the systemic threats that AI technologies pose, such as bias, data exploitation, and eavesdropping enabled by AI. (Noorani, 2024)

Citizens are subjected to the increasing exploitation of personal data in Pakistan's administration, human resources, and governance sectors due to the lack of legally defined ethical standards for AI assessment and data processing. The larger problem at hand is highlighted by the lack of procedures giving workers rights or informed consent in business contexts. According to Akhtar et al., Pakistan can benefit from the GDPR's emphasis on individual rights and accountability criteria. (Akhtar et al., 2024)

When examined in the broader context, deeper concerning trends appear. Digital authoritarianism is made easier by inadequate data protection regulations, which allow surveillance driven by AI to regulate online areas and suppress opposition. The authors warn that AI tools have the potential to erode civil liberties rather than improve governance in the absence of openness and due process. (Ahmed et al., 2023)

The author argues that Pakistan must enact laws and regulations related to artificial intelligence (AI) technologies in contrary to other nations. The author makes the case that regulations pertaining to algorithmic justice, verifiable ethical growth, and exploit-proof audit trails must be included in AI regulations, using the General Data Protection Regulation (GDPR) of the European Union and the Personal Information Protection Act (PIPA) of South Korea. (Hasan, 2024)

Author criticizes various judicial standards for failing to understand how to utilize algorithm models and for lacking explainable AI standards, and the Pakistani legal system is also criticized for its shortcomings in handling AI evidence. The author recommends independent evaluations, judicial training, and legislation that supports simplified AI-focused legal systems. (Ahmad, J. B., Hussain, M. A., & Mir, H. A. 2024)

From the perspective of policymaker, Pakistani individuals are vulnerable to foreign data extraction due to unregulated outbound data flow rules. Ahmed talks about how a loss of national control and digital autonomy results from data that is frequently processed by global AI systems and is evasively available without supervision. They argue that in order to protect national interests, data containment measures are necessary. (Ahmed, 2020)

Author investigates the ethical implications of AI technology in its use within the private sector in Pakistan, noting a complete lack of internal control mechanisms. In her analysis, it emerges that public apathy, coupled with the absence of meaningful comprising policies, allows corporate lobbies to dominate and infringe on individual data rights in the guise of doing business. (Naznin, 2025)

The author tackles the issue as one case of “self-regulation,” discussing how tech companies are not held accountable due to weak institutional frameworks mixed with unenforceable soft laws. They argue that there is a need to enable a new, independent authority for safeguarding personal data and articulating the rights to AI, which include, but are not limited to, the right to an explanation and non-discrimination. (Amin & Hassan, 2024)

Research Gap

The body of work already available tackles the basic understanding associated with data protection laws in Pakistan as well as the evolving use of AI, but there are a few gaps which still need addressing.

Firstly, the influence of AI technology on data protection regulations within Pakistan's socio-legal framework is not thoroughly assessed, especially considering the region's distinct socio-legal frameworks. The issues have been addressed in general terms in the publications that currently exist, but little research has been carried out on how AI features like algorithmic bias and automated decision-making interact with the PECA 2016 and the PDPB 2023 at the level that is crucial to the advanced Pakistani legal system (*Arzak Khan 2019*).

Furthermore, there aren't sufficient case studies or empirical research papers that look at the organizational and personal struggles related to AI and data protection from a Pakistan-centric standpoint. Although there is limited policy and anecdotal discussion, far more thorough empirical research is needed to examine the effects of AI application on privacy issues in Pakistan. This requires digging into the situations in which AI technologies have presented privacy concerns and assessing the legal frameworks that are now in place to address these issues (*Uzma N. C.*).

Thirdly, there is lack of critical legal analyses of Pakistan's data protection system considering international AI legislation from either more established nations that have created AI frameworks with emerging nations' sensitivities in mind or comparable jurisdictions (*Tuhu N. 2024*). A targeted impact assessment that assesses potential legislative frameworks and regulations that may be put in place in Pakistan to mitigate the impact of AI on data protection is lacking, despite the literature analysis possibly offering some international context (*Christopher K. & Gabriela Z. F. 2025*).

Lastly, there are no well-defined actionable strategies developed regarding governance challenges for Pakistan in this area. Some existing policy analyses might offer suggestions, but what is needed is a comprehensive framework of policies tailored to the legal, socio-economic, and technological conditions in Pakistan that would govern the interface of AI and data protection. This involves the justification for changes to current legislation, the creation of additional legal instruments, the bolstering of regulatory institutions, and public education and training programs (*Faiza A. 2024*).

RESEARCH METHODOLOGY

This research will take the form of a comprehensive study, using a hybrid approach to understand the influence of Artificial Intelligence on the data protection laws in Pakistan, as well as answering the research questions and gaps that have been identified.

Firstly, a case study approach will be applied focusing on law data related to data protection in Pakistan. This will include studying the Constitution of Pakistan, the Prevention of Electronic Crimes Act 2016, the draft Personal Data Protection Bill of 2023, and other indicators of cross-sectoral legislative frameworks. Focus will be put on determining the legal boundaries within which AI technologies operate, and their impacts on the scope of law automation and legal tech systems.

Secondly, some primary research will be conducted through the analysis of policy-oriented literature and academic publications, both AI-focused and those looking specifically into the data protection policies in Pakistan. This will be done through the contextualization of AI in the scope of data protection so one can determine the perception that exists on the necessity of transforming frameworks within which AI controlled data systems can be regulated and governed in Pakistan. Following this methodology will aid in

evaluating the state of scholarly work, identifying existing controversies, and analyzing solutions offered by experts.

Thirdly, comparative legal analysis will be conducted on the data protection laws of Pakistan and those of other relevant jurisdictions. The jurisdictions to be selected will include those with similar legal culture, developing states that have advanced considerably in the AI and data protection regulatory framework, and those regarded as having international benchmarks in the field. Such an analysis will enable the identification of key legal frameworks and regulatory approaches alongside best international practices that could be adopted for enhancing data protection legislation in Pakistan in the context of artificial intelligence.

At last, though undertaking original empirical research within the boundaries of this paper may prove to be a challenge, this attempt will include study of instances where AI technologies have been implicated in raising data protection issues in Pakistan, considering it is possible at all through public domain information like news articles, digital rights organization reports, and other academic writings. It is considered that such case studies, albeit scant, would shed light on the struggles arising from the interaction of AI and data protection in the context of Pakistan.

This research strives to accomplish a thorough and evaluative analysis of the effect of artificial intelligence on data protection laws of Pakistan using the practical approaches in conjunction with the theoretical gaps identified in the literature review alongside the crafting of legislative and policy proposals for the gaps defined.

DISCUSSION

The implementation of AI technologies in Pakistan poses serious challenges to foundational parameters concerning data protection such as data minimization, purpose limitation and even transparency (*Krasimir K. 2024*). AI models generally require extensive datasets to function optimally, which in turn violates the principle of data minimization, which states that only necessary data should be collected and retained (*Cole S. & Eda K. 2024*). With regard to Pakistan, there exists no comprehensive legal framework implementing data minimization measures. The application of AI systems in the country might lead to the unconstrained collection of personal data above the justified or rational threshold (*Kent Blomquist 2025*). The Draft Personal Data Protection Bill (PDPB) 2023 does talk about purpose limitation, asserting that personal data must not be stored longer than necessary (*Aly Hassam Ul Haq 2024*). Such a notion, however, clashes with laws such as PECA 2016 that obliges service providers to retain data for a minimum period of one year. This creates unjustifiable contradictions that undermine the potency of both legislation. Furthermore, the use of AI software's trained on large datasets is applicable for unbounded unforeseen reasons, thus purpose limitation becomes difficult (*William Galkin 2024*). The existing and the current legal structure in Pakistan does not provide sufficient detail on how the principles of AI must be implemented in AI systems to avoid unethical data practices (*Jan, S. U., Khan, M. S. A., & Khan, A. S. 2024*).

The functioning of artificial intelligence within the Pakistani legal framework lacks sufficient legislation which makes implementation of algorithm transparency a deep-rooted issue. The output “black boxes” of certain algorithms like deep learning make nearly impossible the traceable paths of data transitions which hinders the ability to guarantee accountability and challenge systems marked with prejudice (*Bhavika Lohiya 2023*). The gaps in PECA 2016 and the draft PDPB 2023 due to insufficiently strong legal requirements for the transparency of algorithms are extremely unsettling (*Abdul Wassay 2024*). This veritable no necessity of explainable AI would result in no power of contest over the digitally automated decision-making systems that profoundly influence the lives of people.

Achieving meaningful consent for the use of personal data in AI systems, for example, is uniquely challenging (*Secure Redact 2025*). The multifarious nature of AI technologies, together with the potential for data to be leveraged in ways far beyond what was expected, impedes individuals' ability to offer informed consent. The same set of obstacles is further complicated in Pakistan, a place where levels of digital literacy may differ. Draft PDPB 2023 offers provisions around consent, establishing it as an enduring right. Whether these provisions, however, will be able to address the more particular AI processing intricacies, such as granular consent requirements and measures against 'consent fatigue' is an open question. The more traditional model of consent might need to shift in order to ensure people actually retain power over determining how their data is used within AI systems (*Courtney C. Radsch 2025*).

The use of AI systems in Pakistan raises a red flag with relation to the potential for algorithmic bias and discrimination. The underlying bias from the training data tends to get reproduced and magnified by AI algorithms. Those with lower social standing or are marginalized are the primary victim. The global example of advertised employment stereotypes for women and facial recognition of different races showcases the damaging tendencies. Algorithmic bias, along with detection, mitigation and redress mechanisms need to be provided in the Pakistan legal framework which includes the draft PDPB 2023 (*Oxford Insights 2022*). Also, a right to explanation of an AI system's operating logic is important so that the challenged decisions are not based on baseless algorithms (*Karen Johnston 2024*). Although the answerable logic to automated decision making within the draft PDPB might seem contradictory in context, the justification provided is likely not adequate to endorse the conclusion provided.

It is also a fundamental question of whether current enforcement apparatus and regulators in Pakistan may be adequate to tackle AI related data protection infringements (*Faran M. 2024*). As such, enforcement of data protection regulations in Pakistan lies with organizations such as the Pakistan Telecommunication Authority (PTA) and the Federal Investigation Agency (FIA) under PECA 2016. It is not clear, however, that they have the technical and legal expertise and resource capacity necessary to meet the demanding technical and legal questions raised by AI (*Utsa Bandyopadhyay 2025*). PDPB 2023 is the proposed legislation in Pakistan and under this an independent regulatory body has been suggested for data protection in Pakistan called National Commission for Personal Data Protection (NCPDP). How effective the NCPDP is in regulating data guardianship, as well as AI ethics, will be a function of its independence, authority, and resources. Performance of this AI Regulatory Directorate (ARD) within the NCPDP is intended to oversee technology progress from privacy perspective. But their effectiveness will be known after the PDPB becomes a law, and these authorities get established and start functioning.

The intersection of AI with data protection laws in Pakistan has some potentially profound ramifications on very basic human rights that are privacy and freedom of speech (*Arshia M. G. 2024*). The government is currently trying to implement facial recognition technology as a surveillance measure and is expected to help solve crimes. While this is the case, there are growing concerns about the technology, especially in violation of privacy, which will potentially be threatened. First, AI technology might be used for harmful posts, and if the posts are not harmful, then they can be a direct threat to the human rights of privacy and freedom of speech (*Calsoftinc 2024*). Secondly, there are limitations to the Pakistan Data Protection Act and, thus, it might be void in solving the problem.

FINDINGS

From the research conducted, the central findings that emerge from this study are as follows:

1. The legal framework of Pakistan comprising PECA 2016 do not sufficiently assimilate the hindrance AI presents. PECA's concern with cybercrime does not include more abstract data protection issues

pertinent to AI, such as algorithmic bias, transparency, the right to explanation, and automated decision making.

2. The legal issues relevant to the advancements and applications of AI in Pakistan are glaringly underdeveloped and insufficient. Without any general data protection legislation, there are gaps in data protection measures such as data minimization, purpose limitation, and control over AI-specific data processing activities. The draft PDPB 2023 is an improvement but still lacks the scope needed to deal with the issues pertaining to AI (*Hija Kamran 2025*).
3. The adaption or reform of data protection laws to manage AI technology is increasingly recognized by legal scholars, policymakers, and technology experts in Pakistan. There is increasing agreement on the establishing a comprehensive legal and regulatory framework that safeguards fundamental human rights while enabling innovation in the era of AI (*Compunnel, 2024*).
4. International legal practices and models, especially the EU's GDPR and PIPA of South Korea, as well as the experience of other developing countries employing data protection in framed work AI protection, can be beneficial to Pakistan (*Henrique F. M. & Helena D. B. 2024*). These models present various solutions to concerns such as bias in algorithms, transparency, consent, and the creation of regulatory authorities (*Ben C.C 2024*).

RECOMMENDATIONS

Directly from the research's outcomes and discussion, the described below recommendations can be taken for members of the government, legislative bodies, and others in Pakistan as actions:

Amendments or Updates to Existing Data Protection Laws

PECA 2016 should be changed to accommodate the primary data protection principles such as limiting the purpose and the amount of data AI may process in the implementation of personal data by AI systems.

The draft PDPB 2023 should explicitly mention the AI challenges and the best way to handle them within the regulation. This involves new rights that will be granted under law to those who are directly affected by decisions made by automated AI systems as well as mechanisms for determining algorithmic transparency, clarifying the right to explanation, and variation of the required action by similar systems. Moreover, protection against algorithmic bias and discrimination should be ensured by creating robust safeguards.

The PDPB 2023's legislation must go first, and at the same time, the concerns over the too wide definitions, access by the government, data transfer across nation borders, etc., should be given regard to get the balance and efficiency of AI-era data protection regime.

Development of New Regulations or Guidelines for AI

The authorities need to expedite the work concerning the final and proper implementation of the draft National AI Policy 2023, to which specific regulations and ethical guidelines for using AI technologies that impact personal data are incorporated. This policy needs to be in compliance with the data protection and human rights principles.

As the deployment of AI technologies becomes more widespread in sectors such as healthcare, finance, and education that particularly the handling of personalized sensitive data, the need for guidelines that are specific to those sectors is arising. The important point is that the upstream of the AI process, the data protection issues related to each sector are the ones to be taken into account.

A data protection impact assessment (DPIA) particularly for AI systems should be included in a well-defined framework with step-by-step details of the process, which should be adopted. This method

outlines a structured process for identifying and mitigating the possible data protection risks linked to the construction and use of AI technologies.

Establishment or Strengthening of Regulatory Bodies

The ideal stance is to form an independent, resource-sufficient, and, first and foremost, control-regulatory policy maker which would have the role of the overseer of personal data protection in the sense of AI. The commission should be granted the right to apply data protection laws, ratify AI-specific guidelines and regulations, and respond to claims regarding AI-driven data processing.

A special unit or a directorate that has the knowledge of AI and data protection, like ARD that has been suggested, be established inside the NCPDP so that their sole concern is the surveillance of the intersecting two fields, implementation of research, and providing advice to organizations about the protection of AI-related data.

Before the NCPDP becomes completely functional, the available regulatory bodies like PTA and FIA need to be empowered through specialized training and resources to be able to effectively handle AI-related data protection issues within their individual sectors.

Initiatives for Awareness and Capacity Building

To inform the public about the impact of AI on data protection, legal authorities can organize national awareness campaigns to tell people about their rights and how to use them regarding AI data processing.

Through training programs, professionals such as lawyers, decision-makers, and IT experts have the chance to become more knowledgeable about the merging point of AI and data protection and can be thus better equipped to solve issues stemming from the legal and ethical aspects.

It is recommended that academia, industry, and government work hand in hand with each other to advance privacy-preserving AI technologies and establish an ethical culture of AI innovation. Collaboration amongst the parties can authorize the whole phase of research and development for privacy-preserving AI technologies and the promotion of responsible AI culture as well.

International Collaboration

Pakistan is supposed to try to get in touch with global bodies and other countries who have reached a significant stage in AI and data privacy regulation in order to find out about their best practices, legal models and regulatory methods. This also covers being part of international meetings and looking for possible partnerships and agreements between the countries for the facilitation of cross-border data flows with the development of AI.

CONCLUSION

This research has systematically evaluated the consequences of AI integration on the data protection law system in Pakistan. The evaluation demonstrates an alarming gap between the pace of innovation and adoption of AI technologies in Pakistan and the developing data protection regime in law and policy. The existing framework under PECA 2016, which is primarily a cybercrime law, neglects to cater to the all-encompassing challenges to data protection with respect to AI, including data minimization, purpose limitation, transparency, consent, bias and discrimination in algorithms, and automated decision systems. Although there is an attempt at advancing the data protection framework with the draft PDPB 2023, its intent is commendable, but Pakistan still lacks a legislative instrument that is agile and targeted enough to tackle the nuanced consequences of AI.

The discourse emphasizes the prospective dangers to fundamental rights, like privacy and freedom of expression, that lie in unleashing AI technology for use in Pakistan in the absence of a solid and flexible legal framework to govern it. The lack of enforcement procedures along with the absence of authorities responsible for the regulation of the breaches of data protection in AI highlight the need for a focused and empowered regulatory body. The scholarship also accepts the challenge that comes with the proprietary nature of the information used, coupled with the constant shift of the legal and regulatory frameworks of AI and data protection law.

Future research could include empirical studies examining the real-world challenges that organizations and individuals will face around AI and data protection in Pakistan. This would also be valuable opportunity to study public understanding and perception of AI and data protection in the Pakistan context. In addition to that, it would also be useful to study the exact socio-economic and cultural factors that could inform laws and policy around AI and data protection in Pakistan.

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