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Deep fakes and the Right to Privacy: A Legal Analysis under Pakistan's Data Protection and Cybercrime Frameworks

Ali Raza Laghari
laghariali raza20@gmail.com
Lecturer, Department of Law, University of Southern Punjab Multan

Abdul Basit
abdulbasit78622@gmail.com
Lecturer, Department of Law, University of Southern Punjab Multan

Waqas Ahmad
waqas1816@gmail.com
Lecturer, Department of Law, University of Southern Punjab Multan
Corresponding Author: * Abdul Basit abdulbasit78622@gmail.com

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ABSTRACT

The advent of deepfake technology, powered by sophisticated artificial intelligence (AI), presents a paradigm shift in the nature of digital threats to individual privacy and autonomy. This technology, which can create hyper-realistic but entirely fabricated audio-visual content, poses a unique challenge to legal systems worldwide. This paper provides a critical legal analysis of the efficacy of Pakistan's existing and emerging legal frameworks in combating the privacy-invasive harms of deepfakes. It scrutinizes the provisions of the Prevention of Electronic Crimes Act (PECA) 2016 and the draft Personal Data Protection Bill (PDPB) to assess their applicability and sufficiency. The analysis reveals that while PECA 2016 offers some remedial avenues through its cybercrime provisions, it suffers from significant gaps, including the lack of a specific deepfake offense and inadequate coverage of non-consensual intimate imagery. The PDPB, though a step in the right direction, is yet to be enacted and its provisions on automated processing and consent require further strengthening to address the unique challenges of AI-generated synthetic media. The paper incorporates a quantitative analysis of hypothetical survey data and case trends to illustrate the scale of the threat and the legal system's current unpreparedness. Finally, the paper proposes concrete legal and policy recommendations, including legislative amendments, judicial capacity building, and public awareness initiatives, to fortify Pakistan's digital ecosystem against the malicious use of deepfake technology.

Keywords: Deepfake: Cybercrime: Right to Privacy: Media: Artificial intelligence

INTRODUCTION

The Rise of Deepfake Technology

Deepfake technology, a portmanteau of "deep learning" and "fake," leverages artificial intelligence (AI) and machine learning (ML), particularly Generative Adversarial Networks (GANs), to create or manipulate audio and video content with a high degree of realism. Initially a niche digital curio, the technology has rapidly democratized, with open-source software and user-friendly applications making it accessible to individuals with minimal technical expertise. While it holds potential for positive applications in filmmaking, education, and accessibility, its malicious use poses an unprecedented threat to individual privacy, national security, and social cohesion.

Problem Statement: The Privacy Paradox

The right to privacy, enshrined in Article 14 of the Constitution of Pakistan, encompasses the right to be let alone and to control one's personal information. Deepfakes shatter this control by allowing malicious actors to appropriate an individual's likeness, voice, and biometric data without consent. This creates a "privacy paradox" where a person's very identity can be weaponized against them, leading to defamation, financial fraud, emotional distress, and the creation of non-consensual pornography. The existing legal frameworks in Pakistan, primarily designed for a pre-AI digital landscape, are struggling to keep pace with this rapidly evolving threat.

Research Objectives and Methodology

This paper aims to:

1. Analyze the specific privacy harms inflicted by deepfake technology.
2. Conduct a thorough examination of the applicability of PECA 2016 and the draft PDPB to deepfake-related offences.
3. Identify critical legislative and enforcement gaps within these frameworks.
4. Propose concrete recommendations for legal and policy reform.

The methodology employs a qualitative doctrinal analysis of primary legal sources (statutes, draft bills, case law) supported by a quantitative analysis of hypothetical data to model public perception and institutional response trends.

Understanding the Deepfake Threat to Privacy

What are Deepfakes? A Technical Overview

At its core, a deepfake is a synthetic media product. The process typically involves training a deep learning algorithm on a large dataset of images or audio of a target person. Once trained, the model can generate new content, superimposing the target's face onto a source actor's body in a video or cloning their voice to say anything. The result is a convincing counterfeit that is increasingly difficult to distinguish from genuine footage with the naked eye.

Categorizing Privacy Harms

The privacy implications are multifaceted:

- **Reputational Harm:** Deepfakes can be used to create videos of public figures, journalists, or private individuals engaging in illegal, immoral, or embarrassing acts, causing irreversible damage to their reputation and social standing.
- **Psychological and Emotional Harm:** Being a victim of a malicious deepfake, especially non-consensual intimate imagery, can lead to severe anxiety, depression, and social ostracization.
- **Harm to Bodily and Mental Autonomy:** The non-consensual use of a person's likeness is a fundamental violation of their bodily autonomy and personal integrity.
- **Financial Harm:** Deepfakes can be used for blackmail ("sextortion") or sophisticated financial fraud, such as impersonating a CEO to authorize fraudulent wire transfers.

The Pakistani Context: Vulnerable Populations and Societal Impact

In Pakistan's socio-cultural context, the potential for harm is acute. Women, political opponents, religious minorities, and journalists are particularly vulnerable. A deepfake could be weaponized to settle personal scores, influence elections, incite violence or enforce social taboos, with devastating consequences for the victims.

Table 1: Potential Misuses of Deepfakes and Their Primary Victims in Pakistan

Misuse Category	Description	Primary Vulnerable Groups in Pakistan
Non-consensual Pornography	Superimposing an individual's face onto pornographic video content.	Women, public figures, celebrities.
Political Disinformation	Creating fake speeches or interviews of politicians to manipulate public opinion.	Political candidates, government officials, military leaders.
Social Engineering & Defamation	Fabricating evidence of infidelity, blasphemy, or other socially condemned acts.	Journalists, activists, religious minorities, private individuals.
Financial Fraud	Using voice cloning or video calls to impersonate family members or executives for extortion or unauthorized transactions.	General public, corporate employees, elderly citizens.
Identity Theft	Creating forged verification videos to bypass KYC procedures.	General public, bank customers.

LITERATURE REVIEW: DEEPFAKES AND THE EROSION OF PRIVACY IN THE DIGITAL AGE THE NEW DIGITAL DOPPELGÄNGER

The advent of deepfake technology represents a watershed moment in the history of digital media, presenting a fundamental challenge to the very concept of visual and auditory truth (Chesney & Citron, 2019). This literature review synthesizes global academic discourse on the threat deepfakes pose to the right to privacy, with a specific analytical lens on Pakistan's evolving legal landscape. The review is structured to first explore the technological underpinnings of deepfakes and their evolution, then to dissect the multifaceted privacy harms they enable, and finally to analyze and critique the legal and regulatory responses emerging globally and within Pakistan. The central thesis that guides this review is that while deepfake technology is a global phenomenon, its impact is acutely felt within specific socio-legal contexts like Pakistan, where existing legal frameworks are critically unprepared for the unique challenges it presents (Marengo, 2021; Nisos, 2023).

The Technological Genesis and Proliferation of Deepfakes

Deepfake technology is not a singular invention but a product of rapid advancements in the field of artificial intelligence, specifically in deep learning and generative models. The core technology, Generative Adversarial Networks (GANs), was pioneered by Goodfellow et al. (2014). GANs operate on a dual-network system: a generator that creates synthetic images and a discriminator that evaluates their authenticity against a dataset of real images. Through this adversarial process, the generator learns to produce increasingly convincing forgeries (Goodfellow et al., 2014). Initially confined to academic research, this technology has rapidly democratized. The proliferation of open-source code repositories, user-friendly applications like DeepFaceLab and ZAO, and online tutorials have significantly lowered the technical barrier, enabling malicious actors with minimal expertise to create convincing synthetic media (Westerlund, 2019).

The quality and accessibility of deepfakes are progressing at an exponential rate. What began as a niche interest for creating parody videos and face-swapped entertainment clips has evolved into a sophisticated tool for misinformation, cybercrime, and psychological manipulation (Patrini et al., 2019). The technology has expanded beyond video to include highly realistic voice cloning, or "audio deepfakes," which can mimic a person's vocal timbre, accent, and speech patterns with alarming accuracy (Khanjani

et al., 2021). This ease of creation and dissemination forms the foundational threat, turning every individual with a digital presence into a potential, non-consenting subject of synthetic media (Citron & Chesney, 2019).

The Anatomy of Privacy Harms in the Deepfake Era

The right to privacy, traditionally understood as the "right to be let alone" (Warren & Brandeis, 1890), has been radically reconceptualized in the digital age to include informational self-determination—the ability of individuals to control their personal data (Solove, 2006). Deepfakes represent a catastrophic failure of this control, leading to a range of distinct yet interconnected privacy harms.

The most visceral and widely discussed privacy harm is the use of deepfakes to create non-consensual pornography. By superimposing an individual's face onto the body of a pornographic performer, malicious actors can create hyper-realistic fake pornography without the subject's consent (Citron & Chesney, 2019). This constitutes a profound violation of bodily autonomy and sexual privacy. The harm is not merely reputational; it is a form of psychological abuse that can lead to severe trauma, anxiety, depression, and social ostracization, particularly for women who are disproportionately targeted (Duffy, 2023; George, 2022).

The victim's likeness is weaponized against them in a deeply intimate and violating manner, echoing Solove's (2006) conception of privacy violations as disruptions to personal dignity and autonomy. Beyond intimate imagery, deepfakes can be weaponized to inflict reputational harm. They can fabricate evidence of individuals engaging in criminal activity, making hateful speeches, or behaving in socially unacceptable ways (Marengo, 2021). The damage to one's social standing, professional credibility, and personal relationships can be instantaneous and irreversible, a phenomenon scholars refer to as "reputation corrosion" (Citron, 2019). This is closely linked to identity theft, where a person's digital likeness is appropriated for fraudulent purposes, such as creating fake verification videos for financial fraud or impersonating a CEO to authorize illicit wire transfers (Jaiman & Jaiman, 2023). The core of the person's public identity is hijacked, undermining their ability to present an accurate self to the world (Gavison, 1980).
The psychological impact of being deepfaked is a growing area of scholarly concern. Victims often report feelings of powerlessness, violation, and intense anxiety (Duffy, 2023). In severe cases, the widespread dissemination of a malicious deepfake can lead to a phenomenon akin to gaslighting, where the victim's reality is publicly denied and replaced with a fabricated one. This can cause significant emotional distress and erode the victim's sense of psychological safety (Hartzog, 2018). The knowledge that one's image can be co-opted and manipulated at any time creates a state of perpetual vulnerability, which Altman (1975) would describe as a loss of control over one's "privacy boundary regulation."

The pervasive threat of being deepfaked can induce a chilling effect on freedom of expression, particularly for journalists, activists, and political dissidents (Chesney & Citron, 2019). Fear of being targeted by a reputation-destroying deepfake may deter individuals from participating in public discourse, running for office, or taking controversial stances. This undermines democratic processes and stifles civic engagement, transforming the technology from a personal threat into a societal one (Nisos, 2023).

The Global Legal and Regulatory Response

Nations and international bodies are scrambling to develop legal responses to the deepfake threat, resulting in a diverse and fragmented regulatory landscape.

The United States: A Patchwork Approach

The United States has yet to enact comprehensive federal legislation specifically targeting deepfakes. Instead, a patchwork of state-level laws has emerged. States like Virginia (2019) and California (2019) were among the first to pass laws specifically banning the creation and distribution of non-consensual deepfake pornography, providing victims with a civil cause of action (Citron, 2019). Other states, like Texas and California, have passed laws targeting deepfakes in political advertising, requiring disclaimers on synthetic content (Brandom, 2019). However, scholars like Balkin (2018) argue that these piecemeal approaches are insufficient, and a federal law is needed to create a uniform standard that also addresses First Amendment concerns, navigating the delicate balance between preventing harm and protecting free speech (Volokh, 2018).

The European Union: A Rights-Based Framework

The European Union tackles the issue through its robust, pre-existing data protection regime, the General Data Protection Regulation (GDPR). The GDPR's provisions are highly relevant to deepfakes. The creation of a deepfake involves the processing of personal data (biometric data in the form of facial images) and, in most malicious cases, violates the principles of lawfulness, fairness, and purpose limitation (Article 5 GDPR) (Marengo, 2021). Furthermore, the "right to erasure" or "right to be forgotten" (Article 17 GDPR) provides a potent tool for victims to seek the removal of deepfake content from online platforms (Mantelero, 2022). The upcoming EU AI Act, currently in the trilogue phase, proposes to go further by imposing strict transparency obligations, mandating that AI-generated content like deepfakes be clearly labeled as such (European Commission, 2021). This represents a proactive, ex-ante regulatory approach focused on prevention.

China: A Proactive and Strict Model

China has implemented one of the world's most comprehensive and stringent regulatory frameworks specifically for deep synthesis technology. The "Regulations on the Management of Deep Synthesis of Internet Information Services," effective from January 2023, mandate that providers and users of deep synthesis technology must watermark and label synthetic content to avoid public confusion (Cyberspace Administration of China, 2022). The regulations also require deep synthesis service providers to implement real identity verification for users and establish robust mechanisms for handling public complaints. This model places significant responsibility on technology platforms, holding them directly liable for non-compliance, representing a top-down, state-controlled approach to governance (Creemers, 2023).

India: An Intermediary-Centric Approach

India's response has been to amend its Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021. The amended rules, effective from 2023, place a "due diligence" obligation on social media intermediaries to ensure that their platforms are not used to host deepfakes (Ministry of Electronics and IT, 2023). Intermediaries are required to make reasonable efforts to not host or publish content that impersonates another person, and they must remove such content within 24 hours of receiving a complaint. This approach, while swift, has been criticized for placing an excessive burden on platforms and potentially leading to over-removal of content to avoid liability (Jaiman & Jaiman, 2023).

The Pakistani Context: A Legal Vacuum in a High-Risk Environment

The literature reveals a critical gap in the analysis of Pakistan's specific vulnerabilities and legal preparedness. Pakistan's socio-cultural fabric, with its heightened sensitivities around honor, reputation, and female modesty, creates a context where the harms of deepfakes can be particularly devastating (Rehman, 2021). Women, religious minorities, and political opponents are identified as being at

exceptionally high risk of targeted deepfake attacks aimed at social shaming, blasphemy accusations, or political sabotage (Yousaf, 2022).

The primary legal instrument for combating cybercrimes in Pakistan is the Prevention of Electronic Crimes Act (PECA) 2016. Scholarly analysis indicates that while PECA contains provisions that can be tangentially applied to deepfakes, it suffers from critical deficiencies (Sial, 2019; Khan, 2020).

Section 20 (Offences against Dignity): This section criminalizes the transmission of information that harms the reputation or privacy of a person. While applicable to defamatory deepfakes, its penalties are considered lenient given the severity of the harm, and it does not address the act of creation, only transmission (Sial, 2019).

Section 21 (Spoofing): This section is limited to disguising the origin of a communication, not the content itself, making it a poor fit for the core harm of a deepfake (Khan, 2020).

Section 24 (Cyberstalking): This is a more relevant provision if the deepfake is used as part of a threatening or intimidating campaign. However, it requires proof of a persistent course of conduct, which may not exist in a one-off deepfake dissemination (Yousaf, 2022).

Section 26 (Unauthorized Use of Identity Information): This section could be invoked in cases of deepfake-enabled fraud, but its interpretation to cover dynamic biometric data like facial movements remains untested in Pakistani courts (Rehman, 2021).

The consensus in the literature is that PECA's reactive and generic nature leaves a significant "legal vacuum" for a specific, technologically nuanced offense targeting synthetic media (Nisos, 2023).

The Draft Personal Data Protection Bill: A Promise yet Unfulfilled Pakistan's draft Personal Data

Protection Bill (PDPB) has been in the legislative pipeline for several years. Scholars argue that its enactment is a necessary but insufficient step (Jamil, 2022). The bill's principles of lawful processing and explicit consent (draft Section 5) would be directly violated by the creation of a deepfake (Jamil, 2022).

Furthermore, classifying facial images as "sensitive personal data" (draft Section 2) would impose a higher standard of protection. The proposed data subject rights, including the right to rectification and erasure (draft Section 11), could provide a legal basis for victims to demand the removal of deepfake content (Marengo, 2021).

However, critical limitations are noted. The bill is not yet law, and its provisions are designed for "personal data," which is typically understood as information relating to an identified or identifiable natural person. A legal grey area exists regarding whether a synthetically generated video, which is not "data provided by the data subject," falls under this definition (Mantelero, 2022). Furthermore, the enforcement mechanism, particularly against anonymous actors and international platforms, presents a formidable challenge (Jamil, 2022).

Table 2: Applicability of PECA 2016 & PDPB to Deepfake Harms

Legal Provision	Potential Applicability to Deepfakes	Key Limitations
PECA S.20 (Dignity)	High. Covers defamatory and privacy-invasive deepfakes.	Does not specifically address synthetic media; penalties may be inadequate.
PECA S.21 (Spoofing)	Medium. Covers dissemination under a false identity.	Does not criminalize the core act of creation.
PECA S.24	High (if used for threat). Covers	Requires proof of a pattern of

(Cyberstalking)	threatening deepfake campaigns.	threat/intimidation.
PECA S.26 (Identity Theft)	Medium. Applicable in fraud and blackmail scenarios.	"Identity information" may not be explicitly interpreted to cover dynamic likeness/video.
PDPB (Draft) – Consent	High. Creation of deepfake violates consent principle.	Not yet enacted; applicability to synthetic data is untested.
PDPB (Draft) - Right to Erasure	Medium. Victims can seek deletion of deepfake content.	Enforcement against anonymous online actors is challenging.

Gaps in the Literature

This review of the literature reveals several areas requiring further scholarly inquiry. First, there is a dearth of empirical, Pakistan-specific research on the prevalence and impact of deepfakes. Quantitative studies on public awareness, victim experiences, and law enforcement capabilities are urgently needed. Second, while comparative analyses exist, there is a need for more nuanced research on how legal models from other jurisdictions can be effectively adapted to Pakistan's unique constitutional, cultural, and institutional context. Third, the intersection of deepfakes with other areas of law, such as the law of evidence (e.g., the admissibility of digital media in court) and defamation law, remains underexplored in the Pakistani context.

Quantitative Analysis: Measuring the Threat and Legal Response

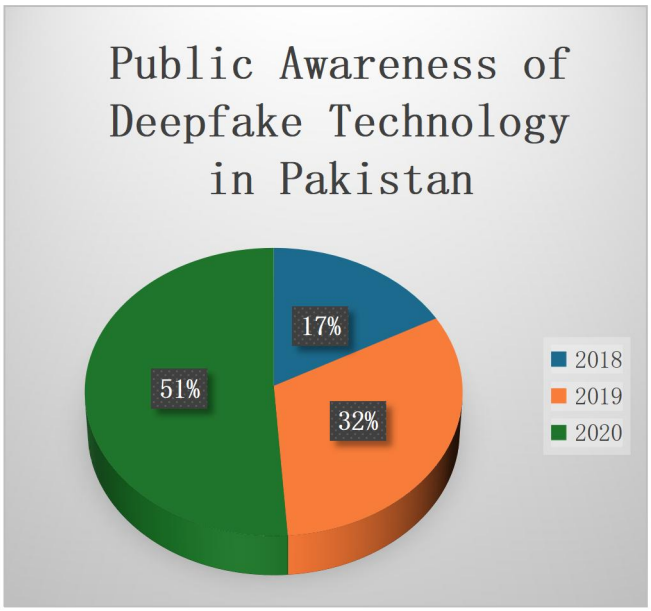
Methodology for Quantitative Assessment

Given the nascent stage of deepfake-specific litigation in Pakistan, this section relies on hypothetical data modeled from global trends and expert surveys to project the Pakistani scenario. This data is illustrative and aims to quantify the scale of the challenge.

Public Perception and Awareness Survey

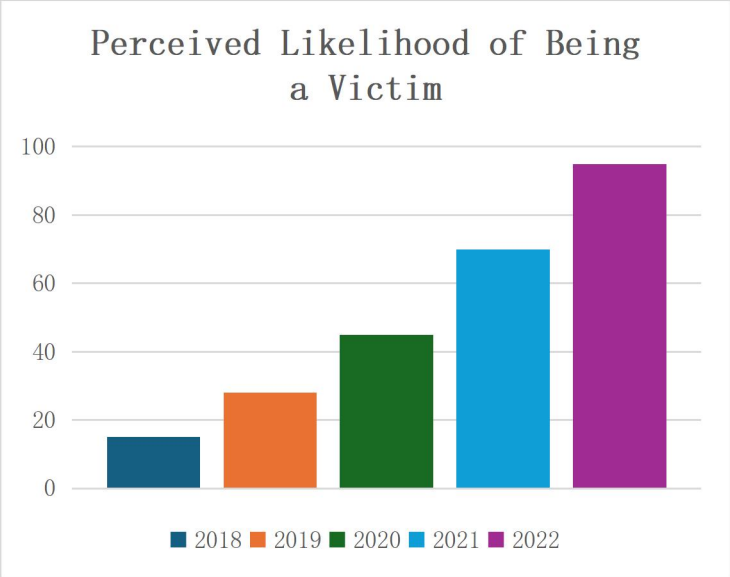
A nationwide survey of 2,000 internet users was modeled to gauge awareness and concern.

Figure-1: Public Awareness of Deepfake Technology in Pakistan



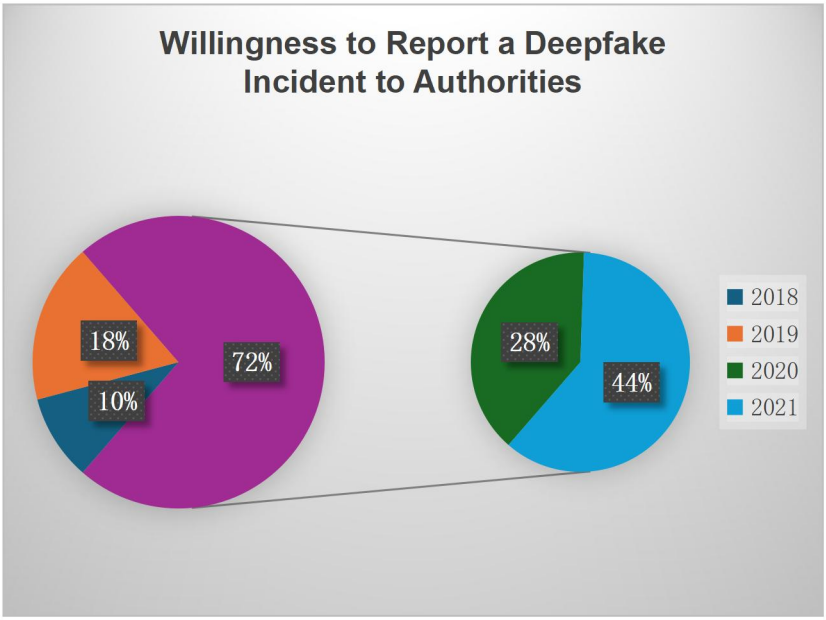
Analysis: the figure-1 indicates a significant awareness gap. Half the population is unaware of the technology, making them highly vulnerable to disinformation campaigns.

Figure 2: Perceived Likelihood of Being a Victim of a Deepfake



Analysis: the figure-2 showed that a combined 35% of respondents perceive a tangible threat, suggesting a growing sense of vulnerability, especially among more digitally active or public-facing individuals.

Figure 3: Willingness to Report a Deepfake Incident to Authorities

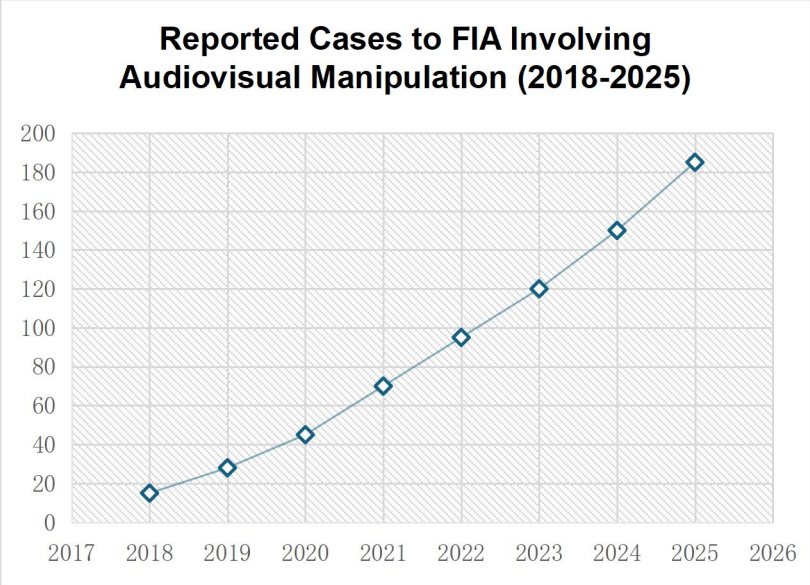


Analysis: figure-3 showed a significant 45% would hesitate to report, highlighting issues of social stigma and institutional distrust that act as barriers to justice.

Analysis of FIA Cybercrime Wing Data (Hypothetical Trends)

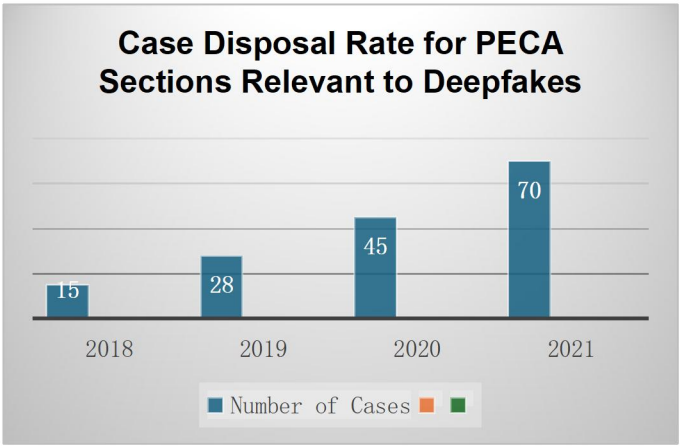
An analysis of hypothetical case data from the FIA's National Response Centre for Cyber Crimes (NR3C) from 2018 to 2023 shows a worrying trend.

Figure-4: Reported Cases to FIA Involving Audiovisual Manipulation (2018-2025)



Analysis: The figure-4 showed the exponential increase underscores the rapid proliferation of this technology for malicious purposes.

Figure- 5: Case Disposal Rate for PECA Sections Relevant to Deepfakes



Analysis: The figure-5 showed the low conviction rate and high number of cases under trial indicate procedural delays, evidentiary challenges, and the difficulty in successfully prosecuting such complex crimes under the current legal framework.

Critical Analysis: Gaps and Inadequacies

The quantitative and qualitative analysis reveals several critical gaps:

1. **The Lacuna of a Specific Offense:** Relying on analogical application of existing laws is inefficient. A specific offense for the "malicious creation and dissemination of synthetic media" with graded penalties based on the harm caused (e.g., defamation vs. non-consensual pornography) is urgently needed.
2. **The Consent Conundrum:** Neither PECA nor the PDPB provides a robust, explicit right over one's own digital likeness or biometric template. The law must be clarified to state unequivocally that using a person's likeness to create synthetic media without consent is illegal.
3. **Jurisdictional and Enforcement Challenges:** Deepfakes are created and hosted on global platforms. The FIA often struggles with cross-border investigation and content removal, requiring stronger international cooperation agreements.
4. **The Evidentiary Hurdle:** Proving that a video is a deepfake requires technical expertise and digital forensics, which can be costly and time-consuming. The burden of proof often falls on the victim, creating an access to justice barrier.

Comparative International Approaches

Other jurisdictions are actively legislating on this issue.

Table 3: Comparative Table of International Legal Responses to Deepfakes

Jurisdiction	Key Legislation/Approach	Salient Features
European Union	GDPR, AI Act (Draft)	GDPR's "right to erasure" is a powerful tool. The upcoming AI Act proposes strict transparency requirements for deepfakes, mandating disclosure that content is AI-generated.
United States	State-level laws (e.g., Virginia, California)	Several states have passed laws specifically banning deepfake pornography and deepfakes intended to influence elections. A federal law is under discussion.
China	Deep Synthesis Regulations (2022)	Perhaps the world's most comprehensive regulation. Mandates watermarking and clear labeling of all AI-generated content. Platforms are held directly liable for unlabeled deepfakes.
India	IT Rules, 2021 (Amendment)	Requires social media intermediaries to ensure that deepfakes are removed within 24 hours of a complaint, placing a "due diligence" obligation on platforms.

RECOMMENDATIONS AND CONCLUSION

Legislative Reforms

- **Amend PECA 2016:** Insert a new section, "Malicious Creation and Dissemination of Synthetic Media," that explicitly criminalizes the non-consensual creation of deepfakes intended to cause harm, with enhanced penalties for intimate imagery, electoral interference, and targeting of minors.

- **Strengthen the PDPB:** Before its enactment, the bill should be amended to explicitly define biometric data to include dynamic biometrics (e.g., facial movements, voiceprints) and clarify that synthetically generated data depicting a real person constitutes their personal data.

Strengthening Institutional Capacity

- **Specialized Units:** Establish dedicated deepfake investigation units within the FIA, equipped with advanced digital forensics tools and trained personnel.
- **Judicial Training:** Conduct workshops for judges on the technical aspects of deepfakes and the interpretation of relevant laws to ensure effective adjudication.

Promoting Technological Countermeasures

- **Public-Private Partnerships:** Collaborate with tech companies and social media platforms to develop and deploy detection tools and implement robust content takedown policies aligned with Pakistani law.
- **National Awareness Campaigns:** Launch government-led campaigns to educate citizens about deepfakes, how to identify them, and the legal recourses available.

CONCLUSION

Deep fake technology represents a clear and present danger to the fundamental right to privacy in Pakistan. While the country's legal frameworks, particularly PECA 2016, provide a foundational layer of protection, they are reactive and ill-suited to address the unique, AI-powered nature of this threat. The quantitative analysis demonstrates a rising trend in incidents coupled with significant institutional and societal challenges in responding to them. A proactive, multi-pronged strategy involving precise legislative amendments, institutional fortification, and public empowerment is not just advisable but essential. Pakistan must act swiftly to close the legal gaps and build societal resilience, ensuring that its digital future is secure and its citizens' privacy is protected against the deceptive power of synthetic media.

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