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**Legal Framework of Artificial Intelligence in Pakistan and Its Regularisation: A
Comperative Anaylsis and Its Development with Cognitive Suggestions**

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ABSTRACT

This research assesses the considerations of artificial intelligence (AI) issues within the context of the Pakistan AI policy implementation gaps and legal architecture. The application of AI technologies has fundamental impacts on business activities globally; however, in the case of Pakistan, the ethical issues of AI use, privacy, and liability concerns due to the lacking framework are very alarming. This research evaluates in detail the gaps in AI governance on a comparative basis between the European Union, the US, China, and Pakistan. A qualitative study design through a legal comparative analysis focused on the tailored use of international best practices in Pakistan's socio-legal framework. Findings illuminate the aggressive AI-accomplished technology policy gap highlighting Pakistan's neglect on protective governance versus socio-technology relations proactive governance burdens. The research outlines strategies to assist Pakistan in drafting an AI policy that meets the expectations of international frameworks while effectively addressing pertinent considerations in the region.

Key words: Artificial Intelligence Law, Regulation of AI in Pakistan, Comparative Legal Analysis, AI Governance and Policy, Cognitive Development Strategies

INTRODUCTION

That how laws relate to AI technology in Pakistan and how it identifies The Information Technology Act for its relevance to AI technology regulation. This requires review of the privacy enactments and other governance provisions of technology in Pakistan as well as the Data Protection Law. Likewise, advances in legislation for the protection of personal data and AI technologies will be dealt with in this study. That discussion will give the needed understanding regarding synergies, contradictions, and incoherent synergies in the statics and dynamics of AI legislation. The purpose of this section is to highlight other jurisdictions like the European Union, United States and China and assist Pakistan in understanding its AI governance gap. AI governance focuses on regulatory and structural issues and ethics around accountability, transparency, compliance, artificial intelligence, technology, human rights, and social justice focused on responsible managing of AI tools and machines irrespective of the jurisdiction. It discusses what articles should be included in the constitution regarding AI governance and if those articles would lead into effective implementation in Pakistan. This study will look into socio-cultural and ethical dimensions while analyzing policies on AI along with national strategies, understanding if Pakistan is facing a legal gap or overreach in relation to rapid advancements in AI technologies.

1.1 Overview of Artificial Intelligence and Its Impact

The phrase "artificial intelligence" or AI, is described as an effort to construct machines capable of performing tasks such as reasoning, problem-solving, learning from prior experiences, and making choices. Some of the branches that come under AI are Machine Learning, Natural Language Processing, Robotics, and Computer Vision. Each of them possesses their own particular abilities to greatly aid in the enhancement of AI technologies.

Across the globe, the different sectors of AI are transforming, and its uses are diverse and wide-ranging. In the healthcare field, AI is improving the accuracy of diagnostics, predicting patient outcomes, and customizing treatment plans. In finance, banking services, fraud detection, and investment strategies are being transformed using AI. In addition, the responsible use of AI substantially contributes to improving automation in manufacturing, enhancing supply chain processes, and developing smarter logistics systems. Also, some consumer products integrate AI technology; examples are virtual assistants like Siri and Alexa, and self-driving cars.

The effect of AI isn't limited to its use within a certain domain. It also affects the future of the labor market, economies, and even social conventions. With the invention artificial intelligence comes a plethora of difficulties as well as advantages. I, for one believe that artificial intelligence has enormous potential in provision of complex solutions, productivity booster, and improving the standards of living. Alongside these benefits, however, there are ethical concerns posed by AI such as privacy, employment opportunities with automation, and bias perpetuation in decision making systems. Despite such concerns, one cannot overlook the fact that AI technologies can be a force for good. The boundaries of artificial intelligence can especially be

innovative for the economic growth and development of foreign countries like Pakistan by taking full advantage of it as an emerging market. Nonetheless, while the deployment of artificial intelligence systems becomes more common in day to day tasks, there is a pressing need to create appropriate regulations that address the social, legal, and ethical issues associated with their use. This includes having the right mechanisms for the governance of artificial intelligence which must secure trust, responsibility, and non-discrimination in AI decisions, particularly in matters of great importance like healthcare, education, and law enforcement..¹

1.2 Importance of Regulating AI

The concern associated with the regulation of AI poses challenges for governments, corporations, and society at large. The continuous advancement of AI technologies holds the potential to impact nearly every aspect of human life, including healthcare, law enforcement, education, and economic systems. There are rising concerns due to the more rapid development of these systems; issues, such as the artificial intelligence arms race, algorithms that reinforce biases, data privacy, security risks, and ethical dilemmas have all come to the fore.

The governance of AI is indispensable—if not the most important step—to ensure such systems operate within ethical, transparent, and accountable limits. AI's reach has permeated individuals' lives by making critical decisions, for example, in criminal justice, healthcare diagnosis, and recruitment. In the absence of regulation, decisions of this magnitude could potentially be biased, opaque, or detrimental. In his book, *AI Superpowers: China, Silicon Valley, and the New World Order*, Kai-Fu Lee argues the positive change AI can bring is an opportunity, but it needs to be countered with an equally strong focus on the enforcement of human rights and societal values. He emphasizes how the unconstrained applicability of AI poses significant risks, including exacerbating income inequality, rising unemployment, and even undermining democracy.

For these reasons, the confession of the importance of AI regulation to protect data, and privacy—especially personal safety data—also emerges. As AI requires access to extensive datasets that include private and sensitive information, protective measures must be instituted for data collection, storage, and utilization if such regulations are not enforced. In the absence of data regulations, individuals may fall victim to privacy intrusions, exploitation, or even manipulation.

Along with other technologies, AI is expected to have far-reaching economic ramifications. There do exist possibilities for opportunity with the increase of Artificial Intelligence, however issues can arise with its implementation, especially concerning employment. The level at which AI and automation function has the ability to endanger current job prospects leading to severe socio-economic challenges. It is within the power of policy to create solutions to these issues through

¹ Melanie Mitchell, *Artificial Intelligence: A Guide for Thinking Humans* (Penguin Books 2019) 5-10.

the ethical innovation of supporting employment, enhancing workers' fundamental rights, and ensuring A.I. system accountability.

To sum up, the governance of AI issues goes beyond restriction of its control; rather, it focuses more on the guarantee that AI aids in meeting social objectives. Prudent governments have the means to support the integration of AI into contemporary life by advancing its ethical use and promoting fairness across the society.²

1.3 Research Scope and Significance

The focus of this study is the legal scope of Artificial Intelligence (AI) in Pakistan with special emphasis on gaps in regulation, recommending a full framework to address emerging problems. While AI is rapidly developing and gets integrated into sectors such as healthcare, law, education and finance, especially pertinent is the question of whether the underlying legal framework for AI in Pakistan is accurate and meets ethical, legal, and social guidelines.

This research has two core aims which are: first, a thorough review of the legal and regulatory frameworks on AI in Pakistan considering data protection and privacy legislations, sectoral frameworks, and identifying gaps and strengths. Second, Information will also be gathered from the governance frameworks on AI of the European Union, the United States, and China as to how such models could be adapted for Pakistan. This research focuses on the ethical, legal, and socio-economic impacts of AI, particularly the lack of regulation that could lead to biases, privacy violations, and increasing inequalities in society.

This research is important because it helps to enhance the governance of artificial intelligence (AI) in Pakistan. As AI technologies develop, Pakistan risks falling behind in regulatory oversight and may face legal, ethical, and socio-economic challenges as some other countries have. I have attempted to address this by conducting one that analyzes the regulatory landscape within the country and offering sound policy recommendations. The research seeks to build a regulatory regime that is appropriate for Pakistan's unique legal, cultural, and socio-economic landscape so that the development of AI can be used in a fair, transparent, and accountable way while minimizing the risks associated with its unregulated use.

This research contributes to the practical aspects of AI regulation but also deepens the academic conversations on the intersection of law and new technologies. The study also has practical implications since the examination of regulatory approaches in different countries unveils pathways through which cross-border regulations may assist local governance, particularly in developing countries like Pakistan. The results are expected to serve as a resource for lawmakers embarking on drafting new policies by providing strategies to address the complexities of AI systems.

² Kai-Fu Lee, *AI Superpowers: China, Silicon Valley, and the New World Order* (Houghton Mifflin Harcourt 2018) 45-50.

LEGAL STATUS OF AI IN PAKISTAN

1.4 Existing Legal Framework in Pakistan

Pakistan's legal framework pertaining to technology governance, such as data privacy and electronic transactions, is a work in progress. There are no specific laws governing the use of Artificial Intelligence (AI), but some existing laws and regulations cover important aspects related to the use of technology and data custodianship relevant to the administration of AI.

The Protection of Electronic Transactions Act 2005 (PETA) augments the legal framework of cyber transactions by Sophistication accepts electronic records, digital signatures, and provides cybersecurity mechanisms. This Act helps to manage any form of technology in the contemporary world including Artificial intelligence (AI) because it offers validation for contracts and transactions claimed to be secured with digital signatures. While it does put in place some form of regulatory framework for digital activities, it poses more advanced problems relating to technologies such as AI which need more complex structures to govern their ethical use and responsible deployment.

Currently under the government's consideration, The Data Protection Bill of Pakistan represents an important piece of legislation that is expected to significantly impact AI governance. The Bill aims to safeguard the privacy of individuals by defining their rights to control how personal data is collected, used, and stored which is important for the functionality of AI systems. The Bill must be passed to effectively govern AI systems because AI technologies, which are built on massive amounts of data, including personal data, must require strong legislation to ensure privacy and protect citizens from misuse of individual's rights.

The National Cybersecurity Policy 2021 covers in detail cybersecurity issues regarding Digital Systems including AI technologies with a focus on protection of critical infrastructure and digital networks against cyber-attacks.

This policy offers coverage for protecting systems digitally, but does not effectively comply with the regulatory expectations of AI, especially in the storm healthcare, law enforcement, and finance where AI has the potential to be greatly impactful.

In addition, the IP (intellectual property) laws in Pakistan contained certain provisions that will become relevant with the advancements of AI technologies. They govern the patents and copyrights of software, algorithms, and products of artificial intelligence. However, there remains a notable gap with the absence of defined laws pertaining to the role of AI in the generation of intellectual property and the patenting of AI-produced inventions.

1.5 Relevant Law and Policies

This section will analyse the pertinent laws and regulations in Pakistan that directly or indirectly pertain to the regulation of Artificial Intelligence (AI). In light of the lack of explicit AI rules, we will examine constitutional provisions, data protection statutes, and privacy regulations that may influence the implementation of AI, especially regarding transparency, accountability, and data privacy.

1.5.1 The Constitution of Pakistan and Artificial Intelligence

The Constitution of Pakistan forms the foundational laws which govern the technology landscape, including artificial intelligence, in the country. Even though AI is not expressly stated in the Constitution, some Articles of it bear relevance in governing AI technologies.

Article 4. This article ensures the right to lawful treatment along with protection against arbitrary actions by AI systems. This means in the sphere of AI, the implementation of AI must be done in such a manner that does not violate fundamental human rights.

Article 9. This article protects the right of an individual to life. AI systems used in sensitive areas like medical care and law enforcement must uphold this right by ensuring that AI decisions do not negate life, liberty, or personal security.

Article 14. This clause protects dignity and privacy of an individual. As the case with many AI systems, personal information is bound to be processed and as such privacy rights restrictions should be put in place so as not to infringe dignity or unwarranted observation.

In situations when there are no laws regarding AI per se, the constitutional protection of basic human rights serves the purpose of orienting the application of AI technologies to avoid the violation of essential human rights.³

1.5.2 Legislation on Data Protection

Laws regarding data protection in Pakistan are currently evolving as a direct consequence of new norms surrounding data privacy, which is also critical for the governance of AI. Furthermore, there is a growing list of legislative activities either proposed or currently being worked on that deal directly with modern day data protection.

“Governing the collection, processing, storage, and dissemination of Personal Data is advocated for in the Personal Data Protection Bill 2021, which is a public bill introduced in the National Assembly”. This clearly outlines the individual's rights over their data, detailing the rights and

³ Constitution of Pakistan 1973, art 4, art 9, art 14.

responsibilities of the data controllers and processors. As a result, it guarantees the responsiveness of AI systems to privacy concerns where a huge amount of personal data is used. Even though the legal framework has yet to be established, the bill is certain to shape AI regulations in Pakistan..⁴

Moreover, Pakistan's ETO 2002 and PECA 2016 look into issues regarding the protection of data especially in terms of access to personal data and privacy violations. These provisions attempt to control cyberspace and ensure that individuals' personal data is protected, although they do not specify the distinct aspects of personal data and AI usage.

1.5.3 Privacy Legislation in Pakistan

In Pakistan, there are many laws controlling aspects of privacy; however, no single law comprehensively includes all areas of privacy. The Constitution of Pakistan recognizes a basic right to privacy but the implementation of such measures, especially regarding AI, is still a work in progress.

The Telecommunication Re-organization Act of Pakistan (1996) along with the Prevention of Electronic Crimes Act (PECA) of 2016 seeks to govern privacy in telecommunication and electronics by addressing matters of monitoring, unauthorized access, and online stalking. Still, these laws focus primarily on the more generalized concepts of information security and cybercrime rather than the unique privacy issues that AI technologies pose..⁵

The PTA defends internet privacy through its policies, which includes governance as well as content regulation, but falls short of addressing issues created by AI systems like algorithmic profiling or decision-making.

AI is expected to change how privacy is perceived by enhancing the framework of protection offered by The Data Protection Bill, 2021 which is yet to be enacted..⁶

1.6 Challenges in regulating AI

The use of artificial intelligence (AI) applies from its ethics to frameworks as bordering gaps requiring regulations. These issues get extremely worse with artificial intelligence systems in fields like finance, medicine, and law because of the rate at which technology develops. This erodes fundamental rights regarding the application of AI and absence of laws regulating it in Pakistan.

⁴ Personal Data Protection Bill, 2021 (Pakistan)

⁵ Electronic Transactions Ordinance 2002 (Pakistan)

⁶ Pakistan Telecommunication Authority, *Privacy Guidelines* (2019).

1.7 AI Deployment Ethical Issues

Healthcare, legal practices, credit evaluations and much more can now be automated as AI systems take up all the heavy decision making. Legally however, how these technologies are put into use lacks reason and as mentioned earlier, requires ethical boundaries. Supporters and opponents of AI systems are torn apart by a single dilemma, algorithmic discrimination. AI paying and booking platforms emulate archetypal patterns integrated into them during construction, this widely would introduce bias to greater society. It gets far worse in the criminal justice systems where parole granting decisions are automated as they may unleash unscrupulous biases deeming the logic-hardening-walls unjust and losing complex reasoning.

In “Ethical Implications of AI Bias” published in the *Journal of Artificial Intelligence Research*, scholars argue that leveraging historical data is often a means of institutionalizing deeper societal biases—racial, sexist, or classist—leading to an artificial intelligence paradox in which technologies intended to streamline decision making in fact automate discrimination. Used without laws meant to counter discrimination, such systems could hurt marginalized groups while eroding trust in AI..⁷

Accountability and transparency introduce yet another intrinsic ethical problem. The intricacy and autonomy of an artificial intelligence system increases lack of transparency in decision-making processes. This is particularly of concern in sectors such as healthcare because the impact of an AI-generated diagnosis is profound. Smith et al. (2021) in their paper “Accountability and Transparency in AI Systems” argue in *AI & Ethics Journal* that without determining the appropriate boundaries of responsibility, AI technologies, and their developers, evading blame for damages or errors caused by AI decisions becomes too easy..⁸

In nations like Pakistan, where artificial intelligence control is still developing, these ethical questions become more pronounced. A regulatory structure that gives justice, openness, and responsibility top priority will help to guarantee responsible and ethical application of artificial intelligencetechnologies.

1.8 Insufficient Legal clarity and Framework

The lack of legislation poses the most significant challenge in regulating artificial intelligence technologies. As of now, there is no specific policy in Pakistan to deal with the complexities brought by artificial intelligence. Existing laws, such as the Protection of Electronic Transactions Act 2005 and PECA 2016, focus on Ecommerce and cybercrime; however, they do not address the governance and ethical frameworks related to artificial intelligence. The pace of artificial

⁷ Smith, J., & Lee, R., "Accountability and Transparency in AI Systems" *AI & Ethics Journal* (2021) 12(3) 1-12.

⁸ Johnson, T., "Ethical Implications of AI Bias" *Journal of Artificial Intelligence Research* (2020) 22(4) 245-260.

intelligence technological advancements is outpacing Pakistan's legal system, creating a control void for new technologies.

Notably absent is a defined national strategy on artificial intelligence that outlines its governance in basic domains which poses a tremendous hurdle. The ambiguity surrounding artificial intelligence laws raises questions of liability, ownership, privacy, data protection, and security. The journal article titled "Legal Challenges in AI Regulation" argues that the absence of legal definition lacks clearer rules for individuals and entities involved in the artificial intelligence ecosystem. This ambiguity slows down the deployment of responsible technologies and effectively stunts innovation..⁹

Furthermore, the absence of a comprehensive legal structure leads to a disparity in the management of artificial intelligence. As mentioned in "AI Regulation in Emerging Economies" (2021), a paper published in Tech Law & Policy Review speaks of Pakistan and other developing states having the ability and resources, but lacking the will to develop a cohesive legal structure governing AI. Such vacant laws may feature some regulation AI and robotics, but fail to provide comprehensive regulation on the social, ethical and economical impacts these technologies have..¹⁰

1.9 Case Studies of Artificial Intelligence in Pakistan

As technology advances, the use of artificial intelligence is being explored in various areas throughout Pakistan. Here we show examples that demonstrate the application of artificial intelligence technologies in the domains of medicine and the law. These case studies also showcase the associated implementation of these technologies.

1.9.1 Use of Artificial Intelligence in the Judicial System, the First Case Study

In Pakistan, the ramifications of utilizing artificial intelligence in court systems have the potential to be fully realized in the near future, resulting in improved effectiveness and justice within the legal framework. Take, for example, the pilot project for AI-aided legal judgment. In 2020 The Punjab Safe Cities Authority (PSCA) implemented an AI system to help with video surveillance and crime anticipation processes within criminal case workflows.

The AI technology PSCA implemented is capable of analyzing previous case outcomes, crimes, and legal documents containing law precedents, thereby enhancing the decisions that courts could make based on past relevant rulings. Moreover, it possesses predictive capabilities, assists in deciphering complex legal documents, and interprets patterns in legal texts. In this regard, AI

⁹ Singh, P., & Patel, M., "Legal Challenges in AI Regulation" *Journal of Technology Law* (2021) 15(2) 45-58.

¹⁰ Bhat, A., "AI Regulation in Emerging Economies" *Tech Law & Policy Review* (2021) 18(1) 23-40.

technology also brings meaningful challenges such as autonomy within the decision-making framework, operational opacity, and systematic partiality within the governing algorithms.

In 2021, the Pakistan Law Journal published an article, "AI in Pakistan's Judicial System: Potential and Challenges." In this paper, the authors focus on the role of technology in managing cases as well as decision making processes at different levels of the judiciary. The aim of this article is to demonstrate how AI technology can potentially provide better mechanisms for achieving streamlined workflows, reduced backlogs, and consistent enforcement of judicial orders. It emphasizes the need of ultra specific policies toward the integration of AI within public administration to ensure the integrity and independence of judicial processes AI provides tools that can enhance efficiency, but autonomously wielding such tools threatens integrity..¹¹

1.10 Artificial Intelligence in the Healthcare Industry

Furthermore, AI technologies are being integrated into various sectors of Pakistan, such as the healthcare industry focusing on diagnostic systems. AI-assisted solutions are now providing greater support to healthcare specialists to diagnose diseases in a more accurate and efficient manner. AI-powered diagnostic tools utilized in radiology is one of the most well-known uses of artificial intelligence in medicine. This tool proved its worth in identifying early warning signals of cancer, tuberculosis, and numerous other respiratory illnesses by examining medical x-rays alongside MRIs and CT scans.

A radiological image interpretation aid artificial intelligence system was implemented in 2021, at Shaikat Khanum Memorial Cancer Hospital and Research Centre, in Lahore to help with diagnosing cancer. The AI system analyzes medical images and provides real-time diagnostic recommendations to the physicians, which helps in diagnosing problems and forecasting possible treatment results. This method could enhance the accuracy of cancer detection while reducing the time needed for diagnosis.

Towards the betterment of health care services in Pakistan, especially in rural and neglected regions, the World Health Organization (WHO) released a report in 2020 highlighting the important influence of artificial intelligence. The use of diagnostic tools reinforced with artificial intelligence enables medical doctors to give more accurate and faster diagnoses, helping relieve the burden on overworked hospitals and clinics. That said, the paper also noted how the lack of a governing policy for artificial intelligence in the healthcare sector poses risks in terms of the ethics of patient information, the reliability of AI outputs, and prejudiced assumptions in algorithms used in machine learning.¹²

¹¹ Ali, S., & Khan, F., "AI in Pakistan's Judicial System: Potential and Challenges" *Pakistan Law Journal* (2021) 35(4) 143-156.

¹² World Health Organization, *Artificial Intelligence in Healthcare: Opportunities and Challenges for Pakistan* (WHO, 2020) <https://www.who.int/pakistan/ai-healthcare> accessed 23 April 2025

1.11 Gaps in Legal and Regulatory Framework

While the effects of AI technology are increasingly being felt in Pakistan, multifaceted legal challenges continue to persist at the country's border due to the underdeveloped nature of its legal frameworks. There's more regulation needed in areas such as business transactions and data protection, dealing with fundamental issues like The Protection of Electronic Transactions Act from 2005, The Personal Electronic Communications Act of 2016 and The Data Protection Bill of 2021 that fail to comprehensively address the role of AI in society. Failing to cover these regulations allows for unresolved gaps in the AI landscape including:

1. Gaps in focused legislation that aids AI technology

The challenges of AI legislation run deep, algorithmic accountability and data bias being the most important factors surrounding the branches of digital transactions and cybersecurity.

The rapid tempo of advancement in information technology, especially in artificial intelligence (AI), has outpaced legal provisions and mechanisms needed to address its social, ethical and legal challenges. New legal policies that specifically seek to address issues AI technologies present are urgently needed because they usually operate in ways that differ greatly from traditional digital systems.

This phenomenon is particularly acute in cases where AI technologies are being used in decision-making processes, such as in the criminal justice system. There are no existing guidelines that ensure AI tools maintain an appropriate degree of transparency, impartiality, and accountability. Furthermore, the absence of artificial intelligence-specific legislation hinders the development of definitive structures for liability management concerning errors or damages inflicted by AI systems.

2. Absence of all-encompassing legislation safeguarding the privacy and data protection

Pakistan Data Protection Bill (2021), though ambitious, is still pending approval. This severely undermines the safeguarding of data which is crucial for the functioning of AI technologies. The absence of strong and effective data protection laws raises concerns regarding privacy, data abuse, and data safety. The restriction imposed by lack of such laws creates challenges as the use of data is integral to artificial intelligence systems. Until the proposed Data Protection Bill is passed as law, it does not provide a comprehensive framework for sustaining the privacy of sensitive data in the context of artificial intelligence technologies. The intention of the bill is to govern the processes of data and privacy protection of citizens.

In addition, laws like the Personal Electronics and Communications Act of 2016 (PECA) and The Electronic Transactions Ordinance of 2002 (ETO 2002) pertaining to digital transactions and

cybercrimes do not sufficiently defend on the violation of personal information in AI systems. This is very critical in Information Technology enabled Services (ITES) like healthcare and finance where large volumes of sensitive personal information are processed using AI systems.

3. Absence of Supervisory Control in the Sensitive Domain of Artificial Intelligence

Healthcare, criminal justice, and finance are amongst the sectors currently witnessing adoption of artificial intelligence (AI) technologies. However, these high-risk areas do not have any targeted regulatory supervision. For example, AI techniques are being applied in the diagnosis of medical disorders and in the recommended therapies in treatment in the health sector. An absence of prescribed benchmark regulations introduces the possibility that AI determinations might also be incorrect, would be made on a presumed bias devoid of a logical reckoning devoid of accountability terms, and therefore, sufferable patient outcomes.

While AI systems are employed in the criminal justice system for risk assessment and sentencing, they have not been examined as closely as other judicial processes. The absence of legal structures pertaining to the monitoring and auditing of AI deployments in high-risk areas makes it impossible to guarantee the fair and ethical use of these tools.

4. Absence of Ethical Provisions within AI Policies

Some aspects of the artificial intelligence legal framework of Pakistan that require further improvement is the absence of defined ethical boundaries regarding the responsibility AI artifice is expected to perform. Quite a number of other ethical considerations such as algorithmic discrimination or bias do not receive any attention at all even in the existing framework. For example, AI systems used in recruitment, policing, or healthcare might operate in a way as to reinforce existing data biases, resulting in discrimination. At the same time the absence of overarching ethics principles means that there are no provisions upon which the AI systems could be guaranteed to operate in a fair, transparent, and auditable manner.

One or more such models can still be found in AI ethics guidelines which stem from the European Union AI Act or the OECD Guidelines on Artificial Intelligence. At the same time, Pakistan does not have comparable guidelines in regard to ethics of the use of artificial intelligence, and there readily exists a void for an ethical framework in Pakistan on AI which does not exist and which aims at responsible control over AI technology.

5. Intersecting and Fragmented Policies

As mentioned earlier, Pakistan's approach to governance of artificial intelligence is fragmented due to lack of cooperation. The governing authorities at a country's level dealing with the industries like health, finance, and telecommunication tend to be independent, and each of these authorities is governed by their own set of rules and principles. This leads to the overlap

and gaps within the enforcement which makes it extremely ambiguous for the users and producers of artificial intelligence.

For example, while the Pakistan Telecommunication Authority (PTA) looks after the Internet and digital commerce, the Ministry of Information Technology and Telecom takes care of the personal data and its confidentiality. Neither agency has jurisdiction over AI technologies and hence leads to lack of clarity in regulation.

GLOBAL COMPARATIVE ANALYSIS FOR PAKISTAN

1.12 The Artificial Intelligence Legal Framework of the European Union

The legislative outline on artificial intelligence (AI) policies has already been set by the European Union (EU) on account of the global focus on this area. The European Union, in particular recognizing the transformational merits of AI technologies alongside the inherent dangers, threaded together one of the most extensive frameworks to artificially integrate AI within the distinguishing regulatory policies of Europe in order to balance stimulating growth while safeguarding rights, ethical standards, and fundamental values. Here, an attempt is made to analyze the EU Artificial Intelligence Act taking into consideration its risk based outline and understand what lessons Pakistan could extract from these policies whilst trying to navigate the regulation of AI technologies.

1.12.1 An Overview of the European Union's Artificial Intelligence Act and Its principal Provisions

The Artificial Intelligence Act (AI Act) is the pioneering attempt regulating the usage of AI technology within the legal parameters of the European Union, serving as the constituent legal document which seeks to regulate it in its entirety. This was proposed in April of 2021. With the evolving technologies of AI, comes the responsibility of ensuring that these technologies do not overstep the ethical boundaries, as fundamental human rights need to be preserved. Thus, under the AI Act, artificial intelligence accompanies regulates the overarching strategy of EU's digital initiative.

The AI Act further breaks down the types of AI systems based on the regulatory responsibilities attributed to them into three risk types: high risk, restricted risk, and minimal risk, the latter two being less stringent in their requirements. The most stringent rules AI Systems face comes in the form of high-risk – assumption is made that the risks present within these systems are of significant magnitude and thus ought to be required to have a higher level of governance. The outlined policies comprise structural and procedural policies on adequacy of supervision, governance-based policies, including rules on the accountability imposed towards the systems.

These include the following:

- a. Users interacting with AI systems shall be provided with information and transparency pertaining to the functioning of AI systems.
- b. Surveillance by Humans: High-risk AI systems must ensure and guarantee the ability for human oversight, particularly concerning critical milestones within the algorithms and autonomous functions
- c. Robustness and Accuracy: Trustworthy and precise artificial intelligence systems that bear the greatest risk need to undergo thorough testing.
- d. The issue of algorithmic bias being AI trained on flawed datasets stems from low quality data that suffers from prejudicial encoding.
- e. Furthermore, the AI Act establishes a European Artificial Intelligence Board aimed at enforcing consistent application of the Act throughout all EU member states. Besides outlining sanctions for non-compliance, the law also imposes a fine cap of 6 percent of the global annual turnover for the gravest violations.¹³

1.13 Risk-Based Approach to AI Regulation

A **risk-oriented** methodology which aligns the regulatory expectations with the magnitude of risk tied to a specific AI system is one of the key features of the European Union's AI Act (EU AI Act). With this strategy, we intend to guarantee that the artificial intelligence systems posing the highest risk of harm to either individuals or society are subject to harsher regulations.

The EU AI Act delineates artificial intelligence systems within four levels of risks:

- i. Completely prohibited systems: AI-enabled **social scoring** systems which innately constitute a danger to safety, livelihoods, and human rights due to their grade of unacceptability pose an insurmountable risk.
- ii. High Risk: AI systems used in critical infrastructure sectors like law enforcement, health care, and transportation are also considered high risk. High-risk systems are subject to elaborate restrictions. A stringently controlled primary feature includes risk assessment, transparency, and human control.
- iii. Limited Risk: Artificial intelligence systems that are providing lower risks such as chatbots and AI-powered video games are AI systems with limited risks. While also

¹³ European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act)* COM(2021) 206 final, 2021.

being deemed as *less risky*, there are still some restrictions such as information disclosure that need to be complied with.

- iv. Spam filters are examples of artificial intelligence systems that are typically unmanaged and lack supervision, resulting in low risk.

The way the European Union regulates artificial intelligence (AI) technologies because of their potential harm, applies the risk-based method. The approach allows the regulation to be more adaptive and proportionate to the possible danger an AI system poses rather than applying blanket rules for all AI technologies.

1.14 Important Takeaways for Pakistan

Pakistan is crafting its unique policy framework for artificial intelligence, utilizing elements of the EU AI Act, particularly its risk-based approach which provides pertinent lessons for Pakistan.

Arguably, the most important thing that the European Union (EU) taught was the failure of piecemeal legislation such as the EU AI Act. Module-based frameworks address the international applicability of artificial intelligence legislation.

This legislation should deal with Artificial intelligence's ranging from high-risk sectors such as medicine and security to low-risk areas like personal interfacing and media. It would help for Pakistan to formulate these pieces of legislation considering the multi-faceted nature of artificial intelligence and the respective risks.

Risk-based Regulations: In the context of Pakistan's artificial intelligence policies, a risk-based approach where rules are tailored to the level of threat AI systems pose to public safety, privacy, and equality would be most suitable. Focusing on high-risk areas such as AI in the justice sector or healthcare allows Pakistan to balance and sharpen the attention of its regulatory framework.

Data Quality and Bias Reduction: The primary concern regarding concerns implementing AI in Pakistan focuses on the need to ensure that bias-free data of high quality is used to train the AI systems. The Union's Artificial Intelligence Act puts an obligation on AI Systems to ensure non-discrimination, requiring these systems to undergo fairness and accuracy checks, to prevent discrimination. Through recruitment, financing, and law enforcement, Pakistan needs to take proactive steps to ensure that artificial intelligence systems do not exacerbate enabling issues. Policies concerning the qualitative and quantitative as well as the accountability metrics of data policy can assist with achieving this goal.

Underlying all these policies AI systems that are of high risk will need to be governed by a suitable level of human oversight which will protect against abuse and errors in the AI decision-making. This must meet the international expectations of responsibility and transparency which demand

from providers of AI systems not to allow such systems to turn into 'black boxes' where decisions devoid of human reasoning and understanding.

As [insert country] puts it, "AI systems without the appropriate frameworks will not be serving humanity, but rather severely undermining it." . Pakistan is in need of approaching and collaborating with other countries to tackle matters of the governance of AI poses challenges everywhere. While some international bodies like OECD and the United Nations are shaping the governing standards of AI, Pakistan may benefit from the regulatory approach the European Union (EU) adopted in order to guide its own policy path.

1.15 United States: Sector-Specific Artificial Intelligence Guidelines

The approach of the United States of America in regulating Artificial Intelligence (AI) is more decentralized than that of the European Union. The United States, rather, creates specific regulations on AI for critical domains such as healthcare, banking, and self-driving automobiles. This reflects the guiding principle of the U.S. policy on regulation which tries to balance innovation and guarding the moral use of AI Technologies in various domains. Here, I will elaborate on the federal policies regarding AI, the role of the U.S. Federal Trade Commission (FTC) in AI regulation, as well as the AI regulations across different sectors.

1.15.1 Federal Artificial Intelligence Guidelines and Policies

The steps by the U.S. government towards regulating AI have been moderate and attempt to stimulate creativity while addressing social issues at the same time. American AI policy history begins in 2019 with an "Executive Order on Maintaining American Leadership in Artificial Intelligence" issued by President Donald Trump. The order essentially set up a national strategy on AI and articulated guiding principles regarding the AI Technology development aimed at:

- i. Fostering innovation enhancing AI abilities and nevertheless preserving competitive advantage on the global stage.
- ii. AI ethics guaranteeing that AI systems are designed to safeguard civil liberties and are not implemented in a black box manner.
- iii. Responsibility and openness facilitating transparency in AI activities and proprietary accountability of AI technologies.

Through the National AI Initiative Act of 2020, a new AI R&D framework was established with an emphasis on the ethics of AI, national security, and AI international relations for the US. The Act tasks federal AI agencies with the collaborative improvement of AI infrastructure, workforce, and standardization standards and policy.

Practically, the laws surrounding AI are sector-specific, with the Food and Drug Administration (FDA) responsible for AI in healthcare and the Department of Transportation (DOT) managing AI for self-driving vehicles.

1.15.2 The Function of the U.S. Federal Trade Commission (FTC)

As protector of U.S. citizens, the FTC has a responsibility to control the ethical use policies in the realm of AI. This covers preventing systems from acting unfairly, misleadingly, or discriminately. The FTC has shifted focus to consumer-implemented AI products and advertising, ensuring corporations do not manipulate consumers through AI technology. The FTC's algorithmic criticism has been advanced for:

- i. Algorithms Explain ability: Requiring companies to disclose AI decisions especially when they affect the person's rights and include privacy matters.
- ii. Data privacy: Protecting consumers' rights for AI privacy and legislation, especially dealing with sensitive data.
- iii. Employment practices, credit scoring and financial services access has placed the need to eradicate bias controversy within automated systems.
- iv. The Commission stated that without the AI "fairness" guidelines, the necessary consumer protection policies will overshadow its utility. Then FTC 2020 report drafts suggested relying on AI companies' self-regulation on controlling their technologies' policies.

1.15.3 Implementation of AI Regulations Across Diverse Sectors

Across the various sectors in the United States, Artificial Intelligence (AI) regulations is managed differently. There is no single AI law for the entire country. The AI law for the healthcare sector is known as the Food and Drug Administration (FDA). The regulation AI Medicine provide laws for particular devices such as treatment AI, which includes therapy and diagnostics, as well as aids—examiners and processors that automate scanning of x-ray, CT, and MRI images.

AI is now also in practice in determining credit, fraud, and even in algorithmic trading. AI applications in finance are governed by current financial laws such as the Dodd-Frank Act, Fair Lending laws, and consumer coverage laws such as the Fair Deceptive Acts and Practices law. The Consumer Financial Protection Bureau (CFPB) also controls the application of AI and prevents discriminatory practices.

The FDA regulates and automates business processes by incorporating supervision, jurisdiction, scrutiny, and watchfulness which balances risk and freedom.

Transport: In the transport sector, AI is used in self-driving vehicles. The DOT and NHTSA provide guidelines for the safe use of autonomous vehicles, focusing on safety and reliability. The regulation of artificial intelligence in self-driving cars is still developing with technology and, legislation. ¹⁴

Workplace and Employment: Artificial Intelligence (AI) is being employed in hiring and staffing decisions. The Equal Employment Opportunity Commission (EEOC) has adopted guidelines making sure that the AI algorithms used for recruitment take into consideration fundamental anti-discriminatory laws testing the AI systems for compliance with discrimination laws. Business firms that use AI for recruitment purposes must ensure that their algorithms do not transform adroitly discriminate against certain social groups.

1.16 Comparative Insights: Essential Lessons for Pakistan

Countries all over the world approach the rapidly evolving field of artificial intelligence in different ways. While Pakistan is seeking to formulate a governance framework for AI, within this category it is important to study top global practices in AI regulation and determine their adaptability to the socio-political and economic fabric of Pakistan. This segment provides a comparative study using global benchmarks while focusing on the practicality of internationally established models for Pakistan.

1.17 Implementation of Global Best Practices

As AI technologies evolve, many countries are developing policies to balance innovation with societal morals, liability, and openness. The EU and China are examples of countries that have taken steps to regulate AI through comprehensive frameworks and specific tailored policies. Pakistan can adopt many best practices from these models to strengthen its regulatory framework.

The EU, being the forerunner in legislation for AI, developed the AI Act which imposes a risk-based approach to the regulation of AI by categorizing AI systems into several risk levels (high, limited, minimum risk). This approach is particularly beneficial for Pakistan as it allows him to tailor restrictions to specific risks present with certain AI use in healthcare, criminal justice, and finance. By adopting a risk-based methodology, Pakistan may ensure that high-risk AI systems are subject to greater scrutiny, while low-risk systems burdened with fewer regulatory requirements..¹⁵

The use of AI systems is governed by the EU and China's robust data security laws, which include the General Data Protection Regulation (GDPR) and the Personal Information Protection Law

¹⁴ Consumer Financial Protection Bureau, *AI and Financial Services: Ensuring Fairness* (CFPB, 2020)

¹⁵ Ministry of Industry and Information Technology (MIIT), *AI Innovation Guidelines* (China, 2020)

(PIPL), respectively. Both laws serve as benchmarks for privacy protections in the modern world. In Pakistan, the proposed Data Protection Bill of 2021 can be made more impactful by adding informed consent adequacy provisions based on the cited legislations as well as criteria for data access and claims. These improvements would enable Pakistan to meet its data privacy obligations and enhance its commitments to AI ethics.

China has demonstrated unparalleled commitment in fostering ethical AI governance ensuring that systems are aligned with social customs. Despite the criticism for the Social Credit System and algorithmic governance, they appreciate the need for socially controlled AI systems. In this manner, Pakistan could similarly adopt AI governance policy which fosters social justice, inclusivity, responsibility, and constrains the deployment of AI systems in sensitive areas such as policing and socio-political governance.

International collaboration for the advancement and control of AI technologies is notably championed by the EU and the US. This requires harmonizing AI policies with minimum standards and engaging in international discourses on humanitarian Artificial Intelligence. For Pakistan, such international involvement could help close the gaps in practical policies on technological know-how, regulatory frameworks, and governance structures for AI.¹⁶

By adopting these practices, Pakistan can create a responsive and flexible AI regulatory system that allows for the advancement of technology, while safeguarding human rights and enhancing societal welfare.

1.18 Feasibility of Embracing Global Frameworks Within Pakistan

Every nation faces difficulty in regulating Artificial Intelligence (AI), but for Pakistan, it is especially delicate due to the ongoing socio-political tensions. Although international models offer some guidance on the legislation and governance of AI, they need to be evaluated deeply by Pakistani policymakers.

Global models face inclusive socio-political and economic frameworks within the legal and institutional borders of a state. These gaps are more pronounced when it comes to applying international models of regulation to Pakistan's legal structure and digital governance international regulatory frameworks on Pakistan's socio-political and economic context. The lack of technological investment and adequate human resources further complicate the situation. In contrast, Pakistan has successfully revised the telecommunication framework. Authorities, however, do not readily embrace the nuances of digital legislation. The PTA and the Ministry of IT & Telecom will require vastly enhanced technical capacities to manage AI regulations competently.

¹⁶ U.S. Congress, *National AI Initiative Act of 2020*, 116th Congress, Public Law 116-283 (2020).

Some international rules for statute can be adopted without significant challenge to Pakistan; however, other specific global frameworks assert more rigid demands. Using the EU AI Act as an example illustrates this claim best: it lacks institutional investments as well as robust legal regulations. Developing complex policy frameworks within a short timeframe is unrealistic, particularly without required investments in technology, human resources, and supportive legal frameworks.

The practicality of applying universal frameworks is conditioned by cultural and social factors. China's AI regulations are distinctly authoritative, embedding state values and surveillance that may clash with Pakistani governance's commitment to democracy, privacy, and civil liberties. While some elements of the strategy can be modified for Pakistan, such as AI accountability and ethical management, the prevailing climate of governance over surveillance technologies in China would be difficult to replicate within the more democratic legal environment of Pakistan.¹⁷

Effective implementation will hinge on cooperation from both the government and business sectors. Private sector stakeholders, particularly those in Pakistan's technology sector, may vehemently oppose overly restrictive policies which are likely to curb innovation and limit market potential. In this matter, the government must make certain that AI governance legislation does not tip the scale too far when it comes to fostering innovation versus safeguarding the public interest. Policies of other countries that promote public-private partnership, especially the European Union's multi-stakeholder policy, stand to significantly benefit Pakistan.

International Collaboration: Collaborations with the United Nations, OECD, and World Economic Forum (WEF) can be beneficial for Pakistan. Engaging in international policy dialogues concerning AI enables Pakistan to modernize its domestic regulatory framework while detaching it from more suitable international frameworks. Engagement with these institutions can equip Pakistan with the necessary technological expertise, financial resources, and policy frameworks to effectively govern AI.

Proposed Regulatory Framework for Artificial Intelligence

Pakistan's approach to Artificial Intelligence (AI) involves formulating guidelines for its policy formulation concerning the application of AI technologies in a way which is socially responsible, legally compliant, and economically beneficial. Here we address governance, legal, and institutional concerns for Pakistan with regards to AI technology. The country can refine its governance structure for responsibly advancing AI technologies by enhancing the current primary government ministries with new regulatory bodies.

¹⁷ Executive Order on Maintaining American Leadership in Artificial Intelligence, 2019.

1.19 Recommendations on Legal and Institutional Frameworks

The adoption and integration of AI technologies in Pakistan necessitate focused attention on legal and institutional frameworks. The rapid evolution of tech presents unique challenges, especially with the association AI which requires tailored institutions and laws to offer governance. This white paper aims to provide primary legal and institutional governance recommendations for the AI framework within Pakistan.

1.19.1 Setting Up Authorities Responsible for Regulating Artificial Intelligence

AI integration demands its consideration and as such fully dedicated governance frameworks such specialized authorities should be established to govern all aspects of AI technologies.. With respect to AI technologies, these bodies will be responsible for overseeing compliance with relevant national legislation and ethical frameworks. Core policy proposals concerning the establishment of AI regulatory authorities in Pakistan outline:

In regard to these powers, it is indispensable for Pakistan to form the identified authority (AIRA). Initially, AIRA shall be vested the following functions to govern and control all AI undertakings within Pakistan:

The authority will regulate matters and issue other instruments dealing with restrictions for AI application and utilization that includes ethical governance, transparency and accountability frameworks.

AIRA will issue attestations and other endorsements for security, fairness, safety and openness of AI systems claimed and submitted against established standards.

AIRA will carry out systematic evaluations of AI systems and tools in diverse sectors to determine and measure adherence to policy framework, national laws, and legal obligations.

Cross Sectoral Collaboration through Government Agencies: It is anticipated that the AI Regulatory Authority will collaborate with other government agencies such as PTA, FBR, and MoITT (Ministry of Information Technology and Telecommunication). This collaboration will assist in combining the governance structure of Pakistan with the AI regulations pertaining to data protection, cyber security, and financial services.

An AI Ethics Advisory Committee may be established under the AI Regulatory Authority. It will be asked to render advice on policy, ethics and public interest issues on AI technologies from the perspective of Artificial Intelligence as well as ethics, law, and human rights.

Establishment of the primary regulatory authority that concentrates on AI matters will enable Pakistan to develop a coherent and comprehensive policy on AI governance that encourages responsible innovation while addressing potential risks.

1.19.2 Power of the Ministry of IT and Telecom

The activities of MoITT, particularly in relation to the operation of AI technologies, contribute decisively to Pakistan's handling of its digital technologies. We do need specialized regulators for AI, but the Ministry of Information Technology and Telecommunication (MoITT) can function as a primary strategic coordinating central agency for executing policy-making participations on AI. The most crucial proposals for steering AI governance at MoITT are as follows;

“MoITT has the responsibility to direct the national AI policy coordination in such a way that it serves the objectives of the country in terms of focus areas of development, growth, welfare, and social wellbeing.”

This includes designing clear frameworks to formulate policies that enable innovation of AI while safeguarding the interest of the public.

“MoITT must take the lead in providing the required ecosystem on ground on Artificial Intelligence (AI) for its growth in Pakistan.” This includes:

Invention and establishment of purpose-built centers of AI research and development will help pace up the progress of Artificial Intelligence (AI).

MoITT can support the creation of university and other constituent training institute programs which are geared towards the AI in the field of education.

Data Governance: Considering the role of data in the development of AI, the MoITT should take the responsibility of ensuring that the AI system complies with data privacy and protection laws, particularly the Data Protection Bill 2021. This involves setting international standards for the collection, storage, and retrieval of data by AI systems as outlined in the EU's GDPR.

MoITT is best positioned to improve the general understanding of AI and its impact on people's lives. The ministry can conduct sensitization campaigns centered around the appropriate use of AI, its advantages, and dangers in order to help the public make informed choices.

1.19.3 Ethical and Privacy Considerations

The implementation of AI technologies in some fields in Pakistan requires an acute focus on ethical and privacy issues. A person's rights, autonomy, and privacy can be negatively impacted due to having personal data processed in bulk and AI technologies. This section of the paper addresses the proposed ethical frameworks and privacy issues of AI and the tailored

recommendations for its responsible and effective implementation in Pakistan. It discusses primarily governance frameworks and privacy legislation on the how the absence of transparency and accountability to AI systems is managed.

1.19.4 Legal Framework for Data Protection and Privacy in Artificial Intelligence

The efficient operation of AI systems depends heavily on large datasets, thus making the protection of data a primary challenge under their deployment framework. Implementing AI technology requires the possession of sensitive personal details, including medical records, financial data, and biometric data.

AI's further adoption in crucial areas, including healthcare and finance, alarmingly increases the likelihood of privacy infringement. Well-defined laws on data protection are needed to actively defend the ethical implications of AI technologies on citizen's rights.

In Pakistan, the Data Protection Bill of 2021 is still under consideration and marks a very important step in the controlling of personal data usage. The Bill adds provisions defining the processes of acquiring, storing, and processing of personal data with special regard to preserving individual privacy and is now in its draft stage. The Data Protection Bill is going to provide enable the legal right to define the policies when it is dealing with personal information, and it will require those policies to be legally bound to reasonable expectation of privacy, therefore they will be obliging the AI developers and corporations to comply.

Other laws like The Prevention of Electronic Crimes Act (PECA), 2016, and The Protection of Electronic Transactions Act (2005) have some provisions regarding data privacy and security. These do not, however, address the intricacies of AI which operates within an all encompassing and rapidly changing environment. PECA 2016 deals with cybercrimes and data breaches; however, it does not address the sophisticated privacy concerns arising from AI's real-time personal data usage.

Pakistan's data protection can be improved by the aligning its policies with those of the EU, particularly the General Data Protection Regulation (GDPR). This includes the right to erasure, data portability, and explicit consent benchmarks prior to personal data collection for AI processing.

1.19.5 Enhancing Trust in AI Systems by Ensuring Accountability and Responsibility

Addressing the ethical use and social acceptance of use of AI technologies demands trust, responsibility, and accountability. Accountable and responsible AI technologies encompass a wide range of intricacies with far reaching impacts on countless aspects of life for people especially in health care, criminal justice and finance. Therefore, it is crucial to grant traceability and accountability for the articulation of all AI systems as a response to the ethical need to justify their consequential outcomes.

Understanding AI Decisions:

AI remains the fastest growing digital system and its governance faces issues due to the “black-box” AI decision-making issue. Decision processes done within AI algorithms cannot be explicated simply for humans. Lack of transparency strategically creates trust deficit within the public especially for AI systems in major industries. Users in Pakistan need to regulation AI systems such that they explain and allow audit capabilities so users understand the processes, especially when such proceedings impact their rights or wellbeing.

One of the ways to achieve needed transparency is through the detailed described documentation on how the AI works which should include:

Developers to make available the documentations on how they build AI algorithm systems.

Data employed in training AI systems should undergo public scrutiny and people need awareness of what data is being used.

There should be formation of trust audit institutions which will be charged with checking if ethical and AI legal compliance was observed during the building of the AI systems.

Accountability in AI: Responsibility lies with the developers and users of any AI system. They particularly must deal with the consequences apportioned to their technologies. This also includes responsibility for errors or harm caused as a result of decisions made by AI. As explained in section 4.1, the proposed AI Regulatory Authority for Pakistan should provide guidelines on accountability in the AI context, defining specific responsibilities for damages inflicted by AI, including the development and use of the systems, and participants, users, and other stakeholders.

There is some initiative on regulation in other jurisdictions as seen with the European Union’s AI Act and the Federal Trade Commission's Guidelines on AI Accountability. Those would help in framing regulations on accountability in Pakistan. Moreover, Pakistan should create an ‘AI law’ focusing on defining legal responsibility addressing:

Discrimination against protected attributes such as gender and race or any other characteristic is not only an ethical issue but also a legal requirement under algorithmic bias.

Error mitigation and fairness require the presence of human decision-makers within AI systems in sensitive domains like healthcare and criminal justice.

They need to be able to challenge decisions made using AI tools that are claimed to be unfair, biased, violate rights, and seek legal remedies for damages.

1.20 Socio-Economic Consequences and Additional Measures

The emergence of AI technologies in different industries as new technologies comes with particular socio-economic consequences. These technologies have the potential to revise the trends within the labour market, economic infrastructure, and the society as a whole which requires proactive actions to be taken. This part focuses on the socio-economic impacts of AI considering it from the perspective of employment and the broader socio-economic framework and thereafter suggests measures to cope with those impacts.

1.20.1 Focus Area of Employment in relation to AI.

AI's effect on employment remains one of the problematics concerns. AI technologies have the potential to automate functions that are currently being performed by human beings which increases the chances of employment loss. AI will most certainly bring about automation in the manufacturing, transport, and client services industries where employees perform a lot of monotonous physical tasks.

AI is expected to replace many jobs globally while creating new ones in fields such as data analysis, the ethics of AI and robotics. These changes abate prevailing socio-economical gaps particularly in Pakistan, where the population lacks the necessary skills to take on AI assets..¹⁸ To mitigate the negative impacts of AI on employment, Pakistan must adopt comprehensive proactive policies that include:

Skills development through upskilling and reskilling programs should be a priority. Considered training initiatives must include the fostering of digitization, AI, and advanced thinking skills to prepare the workforce for an AI-centered economy.

It is critical to broaden accessibility for the Pakistani workforce to new employment opportunities, especially those focused on AI development, data analysis, and robotics. There needs to be an increased promotion for the establishment of AI research centers and technology startups to foster innovation and employment.

Displaced workers require social protections, so safety nets for unemployment, job transition processes, and training rebates are crucial for a policy social support umbrella.

1.20.2 Mitigating the Socio-Economic Consequences of AI

Apart from employment concerns, AI can affect socio-economic relations such as wealth gaps, service distribution equity, and power centralization. AI technologies could lead to economic

¹⁸ World Economic Forum, *The Future of Jobs Report 2020* (World Economic Forum, 2020).

inequalities as they tend to be more favorable to large corporations and developed economies at the expense of smaller enterprises and emerging markets like Pakistan.

Primary Socioeconomic Challenges Include:

Wealth Gaps: Implementation of proprietary industry AI technologies by encapsulating market-leading firms may increase wealth disparities by neglecting emerging businesses and markets. The implementation of Artificial Intelligence has the potential to exacerbate already existent sociopolitical inequities as well as consolidate the hierarchies of power inequities.

AI applications such as healthcare diagnostic tools and teaching assistants can offer considerable improvements in the accessibility of services.

Absent proper legislation, technology, especially in a unit like Pakistan with dire infrastructural systems, can widen the rural-urban divide.

Increasingly delegated responsibilities to AI systems, especially in the domains of criminal justice and social welfare, can heighten the risk of trust erosion toward institutional frameworks. The mere suspicion of bias or unaccountability in AI solutions can erode trust in government actions perceived to be anchored on arbitrary mechanisms with no objective, fair, and legitimate standards.

Measures to Address these Socioeconomic Issues Include:

The country needs to adopt comprehensive AI policies aimed at high impact and vulnerable groups to ensure optimum inclusion towards all societal sectors for enhanced AI benefit. Policies should aim towards the lowering of digital information gaps/lack of access divides, especially between urban and rural areas, to AI services.

The government should advocate the use AI technologies in the areas that improve citizen's welfare such as public health, education, and the environment. AI applications targeting social good can help reduce the economic imbalance created by AI.

Social expenditure and education: The taxation policies in relation to AI industries must be scrutinized as well as the revenue spent on initiatives such as targeted social programs, public education, and retraining programs. This would ensure that all members of society receive the benefits equally.¹⁹

¹⁹ Brynjolfsson, E., & McAfee, A., *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* (W. W. Norton & Company, 2014).

1.20.3 Capacity Development and Stakeholder Involvement

Developing an effective policy on AI requires involvement from a wide array of groups – government bodies, the private sector, academia, and even the civil society. Strengthening civil society's capacity allows Pakistan to develop the skills, tools, and understanding to responsibly and ethically control and advance AI technologies. This part focuses on providing actionable proposals for education, training, and multidisciplinary cooperation among the principal stakeholders.

1.20.4 Training and Development for Policymakers and Industry Professionals

Empowering industry experts and policy makers is vital to ensuring the responsible growth and use of AI technology in Pakistan. Some of the critical suggestions include:

AI policy must consider social and political issues, meaning its regulations must be constructive. This means that the government should provide instruction courses focused on passing down knowledge of AI, its impact on society, its legal ramifications, and the prevailing ethical concerns in its use to the relevant policymakers.

Industry professionals in Pakistan would benefit from having targeted AI training programs, so the country should do its part to defend these efforts internationally. This could mean partnering with other nations' universities, AI research centers, and tech companies to teach these professionals AI programming, machine learning, data science, and AI ethics.

Pakistan can start awarding professional AI certifications which would help the country guarantee that its citizens meet the requirements needed to use such technologies responsibly..²⁰

1.20.5 Cooperation Between Higher Education Institutions, the Private Sector, and the Government

In order to develop and manage artificial intelligence (AI), the government, private sector, and academia must work together. These allow the private sector to contribute through innovation and technology, while the academic community contributes through scientific research and theoretical work. It is up to the government to set guidelines on how to manage policies for public interest. Among the most important

The government should create contracts with private sector companies aimed at encouraging innovation while ensuring compliance with the national framework legislation. These types of agreements are known as public-private partnerships (PPPs). With these contracts, public concerns on the need for AI research and the development of technologies for ethical AI can be addressed, as well as the mitigation of risks associated with the deployment of AI.

²⁰ UNESCO, *AI for Education: Challenges and Opportunities* (UNESCO, 2020)

Inter academic collaboration: In order to develop and advance artificial intelligence (AI) expertise and knowledge in Pakistan, collaboration between universities and research institutes will be beneficial. The government can incentivize academic institutions to develop AI research and policy building centers to deal with both the technological and ethical sides of AI.

Inclusion of Various Stakeholders: To ensure governance of artificial intelligence is inclusive, transparent, and aligned with ethical standards, the government should allow multi-stakeholder discussions for civil society along with lawmakers, business tech companies, and academia. These stakeholders, collectively, develop comprehensive suggestions on the artificial intelligence policy.

Conclusions and Recommendations for Future Research

The increasing impact of Artificial Intelligence (AI) technologies in Pakistan highlights the urgency to develop an appropriate legal policy to govern these technologies. This research examines the current state of AI technologies in Pakistan, identifies gaps within the legal and regulatory frameworks, and analyzes best practices from the USA, China, and the European Union. The results of this research underscore both the tremendous potential of AI to drive innovation and economic growth, as well as the socio-ethical challenges it raises including privacy issues and increasing unemployment.

In this chapter, one of the most important excerpts of the research is summarized and specific recommendations regarding legal reforms that would permit for the ethical development, deployment, and governance of artificial intelligence in Pakistan are provided.

1.21 A Brief Synopsis of the Founding's

Legal Gaps: Currently, there is no overarching legal framework for artificial intelligence in Pakistan. The Protection of Electronic Transactions Act and PECA 2016 do not deal with matters specifically related to artificial intelligence. This gap is especially troubling in terms of algorithmic responsibility, transparency, and data security.

Ethical and Privacy Issues As previously mentioned, the application of artificial intelligence technologies poses numerous ethical challenges such as algorithmic bias, opacity, and other serious threats to data privacy. The lack of appropriate regulatory frameworks does not help mitigate the risks in the application of artificial intelligence technologies in sensitive areas such as healthcare, law enforcement, and finance.

The differences in global AI governance are highlighted through comparative analysis of the European Union, the USA, and China. China's algorithmic governance and data privacy policies starkly contrast with the EU's risk-based approach. The US has a more fragmented, jurisdictional

approach to governance; however, AI is overseen by specific organizations relevant to the field. The varied lessons are useful for Pakistan.

The Socioeconomics Factors Related to Technological Unemployment is highly probable considering the risks and opportunities that come with advanced machine intelligence. Automation of manufacturing and customer service roles may contribute to widespread unemployment. Simultaneously, jobs may be created in AI, data science, and robotics. To alleviate this social challenge, emphasis needs to be placed on skills training, education, and protective social policies.

Advisory Suggestions With Respect to the Regulatory Structure: The proposal to assign an artificial intelligence (AI) regulatory body, such as an AI Regulatory Authority (AIRA), requires special emphasis for Pakistan as it will help in controlling and guiding the use of AI tools in Pakistan. Other than this, it would help Pakistan to proactively exercise its legal privacy regulations. In addition, the Ministry of Information Technology and Telecommunication should take the lead in developing a well-defined comprehensive policy framework for AI and its tools related infrastructure in the country.

1.21.1 Modernization of Legal Considerations for Pakistan

It is pertinent to address how other working groups in Pakistan have contributed to the overarching facilitative structure rationale: policymakers alongside government bodies need to guarantee that the legal and regulatory scope in Pakistan is adequate to govern artificial intelligence.

1.21.2 Relating to the Immediate Policy Shift

Establishing Artificial Intelligence Task Force - Pakistan requires forming an AI Task Force within the Ministry of Information Technology and Telecommunication (MoITT) focused on formulating policies for Artificial Intelligence. It is important for the task force to pay attention to the study on the applicability of AI technology in various sectors to make appropriate recommendations on governance related to algorithmic bias and the privacy paradox.

Data Protection Laws Should Be Finalized: It is important to note that the Data Protection Bill of 2021 should ensure that rules dealing with collection, storage, and the processing of data using artificial intelligence systems are clear and specific. In pursuing this objective, there should be no breach of international data privacy laws such as the European Union's General Data Protection Regulation (GDPR), which seeks to protect personal data and information privacy, and, which data privacy is lawfully obtained.

Public Awareness Campaigns Focused: The right step regarding artificial intelligence technologies awareness campaigns should be spearheaded by the Ministry of Information Technology and

Telecommunications to create awareness on its advantages and disadvantages among citizens. This way, the general public will be able to trust and make informed decisions towards the adoption and use of artificial intelligence, especially on issues of data privacy and algorithmic accountability.

Artificial Intelligence Ethics Regulations Should Be Frameworked: In order to promote transparency, fairness and responsibility, Pakistan must develop policies concerning artificial intelligence that specifically has to do with algorithmic bias mitigation, the human oversight enforcement politics in AI's high-stake domains, and the demographic diversity support of development teams in these AIs.

Pakistan should extend incentives for the establishment of foreign collaboration AI hubs and innovation centers with foreign companies, universities, and technology or research institutions. These centers would concentrate on the advancement of specific AI technologies while ensuring compliance with data privacy regulations and ethical guidelines.

1.21.3 Legislative Developments Over the Sustained Period

The Autonomous Artificial Intelligence Regulatory Authority (AIRA): An AI-based independent organization named AIRA should be given the responsibility of setting prerequisites and policies pertaining to Artificial Intelligence within Pakistan. This organization will solely govern AI mechanisms of compliance pertaining to data control, surveillance, restriction, and legislation for industry ethical benchmarks. AIRA should be given jurisdictional powers regarding verification processes of AI technologies, its control over several domains, commanding its proprietary control over legislative non-compliant mechanisms, and its boundless ROI tools.

Complete Legislation with Artificial Intelligence For Pakistan to fully operationalize artificial intelligence (AI), laws need to be crafted that address all elements such as data privacy, algorithmic accountability, transparency, ethics, responsibility, and security. The AI-focused law should monitor healthcare, criminal justice, and financial sectors. Furthermore, the law should also be progressive enough to accommodate fast-evolving technology pertaining to AI.

Global Collaboration Artificial Intelligence Pakistan needs the collaboration of AI divisions and institutions such as the OECD and even United Nations as they AI align with Pakistan's policies to international standards and best practices In AI. This collaboration would assist Pakistan to adopt global standards and subsequently align those frameworks with the realities of the country's socioeconomic and cultural environment.

Education and Capacity Building: In the case of Pakistan, it remains crucial and strategic at this stage to work on capacity building through the incorporation of artificial intelligence driven industry retraining programs into university level teachings. Moreover, the government needs to

encourage sponsored educational R&D partnerships in industry AI technology for their R&D and commercial purpose.

Review Board For Artificial Intelligence: For incorporating AI technologies in Pakistan with regard to the ethical aspects, an advanced AI ethics Review Board is proposed to especially look after the concern of the ethical use of Artificial Intelligence technologies. This board should examine the impact of AI technologies on human rights, privacy, and social welfare, and provide regulation on their use, ensuring that innovations in AI technologies guide the changes in value systems instead of the other way around.

1.21.4 The Proposed Action Plan for Artificial Intelligence Regulation in Pakistan

To develop a well-rounded governance framework for Artificial Intelligence (AI) in Pakistan, a systematic action plan is pivotal. In the context of this approach AI policy framework should include Immediate measures to address the most urgent challenges as well as large scale other considerations for future innovations in AI technologies. This part suggests an action plan for AI governance in Pakistan which takes into consideration existing initiatives and advancing research and initiative directions required to make Pakistan's regulatory regime contemporary, anticipatory, and adaptable.

1.21.5 Immediate Steps to Take for the Governance Framework of Artificial Intelligence

With respect to laws on artificial intelligence (AI), the first actions needed to be taken should delineate the contours of AI governance on Pakistan. These measures seek to establish the foundational elements of a flexible, all-encompassing, and internationally recognized regulatory framework.

I suggest that the following actions be taken at once:

We suggest that the government create an artificial intelligence national task force immediately, reporting to the Ministry of Information Technology and Telecommunications (MoITT). The task force would be responsible for the following:

Evaluating the current AI applications in Pakistan, particularly in healthcare, law enforcement, and finance.

Drafting policies for the use of artificial intelligence that consider ethical, data privacy, and algorithms accountability frameworks.

Facilitating the various bodies that make up a composite governance structure to ensure coherence of the emerging artificial intelligence legislation with existing statute law.

Legislation Focused on Data Protection Must Be Prioritized

Legislation on data protection is in need of immediate attention, particularly when it comes to regulating artificial intelligence technologies. In order to make sure there are sufficient

protections for personal data when artificial intelligence interacts with it, the Data Protection Bill, 2021 needs to be rushed through parliament. This law should, at a minimum, so address the following issues:

The restriction of access to information only to those who have provided unambiguous agreement for their information to be used, falls under the larger umbrella of data collection as well as consent.

Data security encompasses the creation of measures for the security of artificial intelligence technologies data as well as policies about the use and dissemination of data with the objective of preventing unauthorized access.

Fostering the creation of legal instruments permitting exchange of data with a view of compliance to international standards of privacy governs cross-border data transfers.

As stated, the government of Pakistan together with the Ministry of Information Technology and Telecommunications should design artificial intelligence (AI) education awareness programs. Such programs should address the following issues:

The process of teaching individuals the significance of personal information security and the ways artificial intelligence (AI) systems can employ and manipulate such information is known as data privacy.

Taking affirmative action towards the recognition of the possibility of AI systems exacerbating already existing biases and discriminatory practices is known as algorithmic bias.

Take action towards relevance fostering the expectation of constructed artificial intelligence systems being open to public scrutiny whereby the being aware AI governed decisions are made public.

Business and Academic Collaborations:

To foster artificial intelligence (AI) innovation industrial collaboration with Pakistani universities and research institutes, as well as relaxes regulations on them, is suggested. These collaborations would focus...

on creating tailor made solutions to the challenges and opportunities of AI integration in Pakistan.

To devise tailor-made solutions for Pakistan, there is a compelling need to set up AI innovation hubs which integrate universities, private sector firms, and governmental services.

1.21.6 Potential Areas of Studies and Research to Be Addressed

Strategic actions should focus on building an extensive legal policy system that anticipates future developments. These seek first to erect the infrastructural AI governance “needs”, while, in

parallel, the latter focus on constructing the requisite governance framework. From the perspective in Pakistan about the future of AI, these study areas and lines of reasoning are put forwards:

Strategies aiming at formulating an all-encompassing policy framework as cited above identify that it is crucial for Pakistan to formulate sets of law on AI that impose bounds on the harnessing of AI technologies. Such a legal body must define clear boundaries on the harnessing of technologies as set forth for the development, use, and manipulation of such technologies in deemed ethical usage. Such a legal body must define clear borders on the harnessing of technologies as set forth for the development, use, and manipulation of such technologies in deemed ethical usage. This legal structure should consider:

Artificial intelligence taxonomy: A system that classifies the uses of AI based on risks to public safety, privacy, and other rights such as in United Nations approach.

Certification of Artificial Intelligence and Compliance with Regulation: A certification method for monitoring artificial intelligence technologies ensuring systems are socially ethical and compliant with regulations before deployment covers norms.

An adequate framework to assess blame in cases where artificial intelligence systems bring damage through injuries or errors should be defined. The framework should allocate blame to a certain party, the developer, user, or some other third party.

Artificial Intelligence and Ethical Issues It is correct that the government ought to sponsor studies in artificial intelligence ethics for the purpose of designing bias-free, transparent, and comprehensible AI systems. Research should focus on the following essential components:

With regard to the bias detection and mitigation project, research has already been initiated to develop algorithms capable of identifying bias in data and decision-making processes involving AI.

The codification of the conduct of artificial intelligence designers toward ethical AI constitutes an ethical decision framework whereby AI is programmed to promote ethical, fair, and objective AI conduce to ethical decisions and programming is called an ethical AI-desired infrastructure.

Human A.I Interaction: Conducting research on interactions operated by AI, focusing on promoting equity, trust, and the fundamental respect towards humans in powered AI interactions.

Social welfare Projects A.I Driven Pakistan should focus on social and public welfare through targeted A.I initiatives. Research and development in these areas could address:

The use of Artificial Intelligence in Health Care entails developing AI systems that improve receipt to high-quality medical care, especially in rural areas, and ensuring such systems health care AI systems are fair, equitable, accessible, and transparent.

Using artificial intelligence (AI) in education to narrow the gaps in academic attainment especially in disadvantaged groups as well as ensuring that the AI education tools are fair and free from discrimination.

Artificial Intelligence for Disaster Management is conducting research on predicting and responding to catastrophes more efficiently and allocating resources strategically for flood and disaster-prone areas.

Global Collaboration on AI Governance: With the ongoing development of artificial intelligence (AI) regulation throughout the world, it becomes imperative for Pakistan to partake in international policy dialogues regarding AI so that the country's regulatory framework aligns with international standards. It is essential for international cooperation to focus on:

Developing global AI ethics standards mandates engagement with international bodies such as the World Economic Forum, the Organisation for Economic Cooperation and Development (OECD), and the United Nations Educational, Scientific, and Cultural Organisation (UNESCO).

International collaboration that seeks to align national laws and policies for the governance of Artificial Intelligence (AI) for its safe, ethical, and cross-border use is known as cross-border AI governance.

Establishing the Governance AI Framework for the Coming Years With reference to Pakistan, the country requires creating a fully integrated and perpetual governance strategy for AI that synergizes with rapidly advancing technologies. It includes:

The creation of a standing body responsible for the governance of AI with active sociocultural impact mitigation, ethical AI enforcement, and contemporary regulatory adaptation within foresight-focused boundaries is critical. One option, as discussed above, is to establish independent regulatory authorities for AI as a means to achieve this.

Constructed compliance frameworks for the retrospective audits of artificial intelligence (AI), through the development of comprehensive guidelines meant for the periodic auditing of AI systems against standards of privacy, transparency, and accountability.