PREDICTIVE POLICING THROUGH ARTIFICIAL INTELLIGENCE IN PAKISTAN: PROSPECTS AND RISKS

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Author's Declaration

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Date: 22-OCT-2025

Esha Naeem

Dedication

To the people of Palestine and to my dear country, Pakistan—
its unsung heroes, martyrs and all those who wish it well.
To my mama, baba and Sami for their unwavering love, support and care.
And to myself, for daring to dream, stressing out and still not giving up.

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“Once you make a decision, put your trust in Allah. Surely Allah loves those who trust in Him.” (Quran 3:159)

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ABSTRACT

Pakistan, being a developing country, faces significant challenges in law enforcement with a high crime rate and inefficiency in police operations. These issues highlight pressing policy concerns that necessitate urgent actions for the safety of citizens. In this context, the adoption of AI driven policing emerges as a promising solution for effective crime prediction, data driven decision making and optimized resource allocation. This study examines the existing crime prevention practices within the police force, focusing on the application of AI technologies. It explores the prospects of AI predictive policing in Pakistan to reduce crime rates and enhance operational efficiency. Simultaneously, it critically evaluates the risks associated with ethical dilemmas, transparency, data privacy, and misuse in a regulatory environment marked by weak oversight and governance. The study uses the Islamabad Capital Territory Police as its focus area and employs a qualitative research approach. It includes primary data from in depth interviews with law enforcement officials, and key stakeholders while secondary data from literature, international reports and policy guidelines. By demonstrating the benefits of proactive crime reduction through AI, this study emphasizes the importance of collaboration among law enforcement agencies, policymakers, researchers, and technology experts. This research also contributes to both national policy development and global discussions on AI adoption in law enforcement practices, particularly in developing nation's context.

Keywords: AI, law enforcement, readiness, policing, technology, risks, Safe City, Islamabad Police

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
ICTP	Islamabad Capital Territory Police
LEA	Law enforcement agency
ML	Machine Learning
NLP	Natural language processing
BWC	Body Worn Camera
FR	Face Recognition
ANPR	Automatic Number Plate Recognition

CHAPTER 1

INTRODUCTION

1.1 Research Problem

In contemporary society, diverse criminal activities such as street crimes, drug offenses, human trafficking, robbery, vehicle theft, honor killings, sexual assault, domestic violence, financial fraud, smuggling, and cybercrime are alarmingly prevalent, as evidenced by frequent media coverage. Conflicts arising from various perspectives frequently incite impulsive and severe reactions within our communities, often leaving individuals oblivious to the repercussions of their actions. The importance of upholding the rule of law to ensure justice for aggrieved parties cannot be overstated, as it is essential for safeguarding the fundamental human rights of individuals including their property, dignity, and security of life. Embedded within the constitutional framework of Pakistan, as outlined in the 1973 Constitution under Articles 8 to 28, are guarantees of fundamental human rights for its citizens.

Despite the codified statutes and regulatory frameworks, the landscape of law and justice in Pakistan exhibits a trajectory of deterioration. The country's law enforcement includes federal and provincial police services, courts, and prisons, with the police serving as the primary point of contact during incidents. However, issues such as poor governance, outdated systems, political interference, corruption, resource constraints, and lack of transparency have eroded public trust in the police (Abbas, 2020; Malik & Qureshi, 2021). With Punjab's population estimated at around 127.7 million and the Punjab Police employing about 218,913 officers, the ratio of police to residents stands at approximately one officer per 580 residents, highlighting the critical need for adequate resources (Central Police Office Punjab, n.d.).

According to Global Organized Crime Index 2023, Pakistan is ranked 47th out of 193 countries, with a criminality score of 6.03, indicating a substantial impact of organized crime on the

nation's policies, economy, and governance, while its resilience score decreased marginally from 4.00 to 3.96, reflecting police inability to effectively combat and prevent crime (Global Initiative Against Transnational Organized Crime, n.d.). The Bureau of Statistics Punjab (2023) also reported a 189% increase in reported crimes in Punjab, from 262,710 cases in 2018 to 760,371 cases in 2022. Inasmuch as the study is situated in Islamabad, the conditions there are not hugely different. The Islamabad Capital Territory (ICT) police documented 8,566 criminal cases by September 2024 (Azeem, 2024). The government tried its best to reform police services through initiatives like the Police Order 2002, but systemic failures have created a backlog of unresolved cases within the judiciary. In light of these challenges, there is an interest in adopting innovative approaches to enhance law enforcement capabilities and reduction in crime rates.

Various studies have been oriented towards improving policing strategies through community policing efforts or crime mapping with real time data (GIS based) to increase police crime responsiveness (Mansoor et al., 2020; Wassan et al., 2023). Recently, the global trend has shifted towards integrating artificial intelligence (AI) into law enforcement practices, signaling a transformative era for crime prevention strategies. Examples of AI have already become an integral part of our daily lives as seen in facial recognition technology, virtual assistants, movie recommendation and e-commerce algorithms, etc. In Pakistan, the prospects for applying AI in law enforcement are quite promising. Transitioning from conventional policing models to AI powered techniques could enhance the effectiveness of crime prevention tools and reshape the approach to crime reduction. Nevertheless, an indispensable role of AI in the criminal justice system of developing countries like Pakistan has yet to be explored, indicating a significant research gap.

This research set out to investigate the present state of Islamabad police with respect to the involvement of ai technologies transforming police functions. Focusing on AI driven predictive

policing, this emphasizes the role of analyzing both current and historical data to assess crime patterns in hotspots, predict illegal activities, and identify suspects. These Predictive models enable law enforcement agencies to allocate resources effectively, concentrate efforts on high-risk areas, and implement targeted interventions, thus contributing to enhanced community well being and safety (Ling et al., 2024). Whereas AI presents new opportunities and convenience, it also introduces risks related to data security, potential biases and discriminatory practices, privacy violations, and challenges to civil liberties (Quteishat, Qtaishat, & Quteishat, 2024). Additionally, there is a lack of comprehensive laws and regulations in the country to govern their use. By analyzing international studies, this study critically assesses the ethical considerations, and impacts of AI applications in policing, ultimately proposing a framework in the context of Pakistan that balances technological advancement with ethical integrity.

1.2 Research Questions

1. What is the current state of policing in Islamabad?
2. To what level Islamabad Police is equipped and ready to use artificial intelligence to predict and prevent crime in the federal capital.
3. How can AI improve the operational efficiency of law enforcement?
4. What are the international best practices in policing with AI, and what implications do they have for Pakistan?

1.3 Research Objectives

- To analyze the current practices in crime prevention and detection by ICT police and the extent to which AI technologies are used.
- To evaluate the readiness of ICT Police to adopt AI for crime prediction and assess the potential of AI driven solutions to strengthen law enforcement.

- To examine international examples of AI in policing and discuss legal and ethical issues of deploying AI in Pakistani law enforcement.

1.4 Significance of Research

This study not only enriches the existing body of literature but also offers actionable insights for a broad range of stakeholders, including law enforcement agencies, policymakers, researchers, government departments, tech innovators, and the general public. Real time data from CCTV cameras, facial recognition systems, social media, criminal records, and other sources, when analyze through predictive analytics, enables police to efficiently allocate resources. (NT, 2024). This approach encourages the cops to take proactive measures to stay ahead of criminal activities.

The study aims to increase stakeholder understanding of AI technologies in law enforcement, stimulate public discourse about their use, and promote collaborative research projects. Furthermore, it offers policy recommendations from the findings and analysis, alongside global perspectives on ethical usage that have been overlooked in previous research (Mohsin,2024). In discussing the application of AI in predictive policing, it addresses key issues related to AI policies and regulations, including privacy rights, transparency and ethical standards. Recognizing the common gap in technical expertise among policymakers, Brundage et al. (2018) draws attention to the need for close collaboration between technical experts and policy makers to formulate clear and evidence based initiatives. By advocating for such cooperation, the current research supports the development of comprehensive AI policies that balance innovation with ethical considerations to maximize societal benefits.

CHAPTER 2

LITERATURE REVIEW

In the modern era, the world has shown a curiosity to adopt Artificial intelligence (AI) driven by rapid innovation and the need to improve future living standards. Research and development across various fields have focused on the integration of artificial intelligence to maximize its potential benefits for humanity. McKinsey Global Institute and PwC estimate that AI might add $13 to 15.7 trillion to the global economy by 2030 showing an average annual output growth of about 1.2% and making it a major driver of economic growth (Wladawsky-Berger, 2018). This study is situated within the area of crime prevention and policing strategies where application of AI is under investigation.

2.1 Overview of AI And Policing

With the advent of machines and the rise of computers for solving complex problems, artificial intelligence evolved as an advanced field in computer science. Since Alan Turing's test for machine intelligence in the 1950s, artificial intelligence has witnessed phases of AI boom and winter. John McCarthy, a computer scientist, officially introduced the term "artificial intelligence" in 1955 (Press, 2022). While there is no universally accepted definition, it is commonly defined, based on various editions of “Russell and Norvig's Artificial Intelligence: A Modern Approach” as computer systems that perform tasks requiring human intelligence, such as learning, reasoning, problem solving, interaction, and decision making (Collins et al., 2021, p.6). The development of new programs, AI systems, learning models, robots, automated machines along with the popularity of films starring artificially intelligent entities, clearly highlights the importance of AI from the late 20th century to the present (What Is the History of Artificial Intelligence (AI)? n.d.). Different AI applications have made significant contribution to a variety of areas, including healthcare (Jiang et al., 2017), education (Chiu et

al., 2023), agriculture, telecommunication, transportation, defence industry, manufacturing, marketing, banking, fashion and entertainment (Rashid & Kausik, 2024) and even law enforcement (Ijiga et al., 2024)

As change is constant, law enforcement agencies adopt policing strategies tailored to specific contexts, balancing effectiveness while deciding on a proactive or reactive response. Law enforcement maintains peace, safety, and security in society by enforcing laws, preventing crime, and conducting routine operations through various methods including community policing, crackdowns, broken windows, stop-and-search, intelligence led and problem oriented policing (Dye, 2021). While some strategies are concerned with community relations or addressing societal root causes, predictive policing complements these efforts by taking a targeted approach, focusing on crime hotspots, allocating resources efficiently at precise time and location to prevent recurring incidents (Karn, 2013; Reiss, 1992). The National Institute of Justice (NIJ) symposium explored the concept of predictive policing, its benefits for existing crime prevention models and managing privacy concerns (Pearsall, 2010). Ferguson (2019) viewed predictive policing as a set of strategic decisions shaped by underlying policing theories rather than merely a technological tool to predict future crime. He highlighted that modern predictive systems use diverse data sources and approaches to support traditional policing like hotspot policing, community or problem-oriented policing with a focus on crime reduction through data patterns insights.

Different scholars have described predictive policing with similar elements, for example (Meijer & Wessels, 2019) defines it as “the collection and analysis of data about previous crimes for identification and statistical prediction of individuals or geospatial areas with an increased probability of criminal activity to help develop policing intervention and prevention strategies and tactics” (p. 1035). It raises questions like when, where and what type of crime will occur? Who will be the offender, and will the police force be able to prevent him before

the incident? Similarly, artificial intelligence centres on prediction as its core function, a concept that also aligns with policing in supporting decision making, forecasting, and problem solving. This suggests that AI powered policing can enhance data gathering and analysis processes through advanced algorithms, tools, and techniques, ultimately assisting in crime prediction and resource allocation.

In general, AI can be classified into various domains based on their functionalities including machine learning (ML), computer vision, robotics and natural language processing (Rashid & Kausik, 2024; Redden, Aagaard, & Taniguchi, 2020). These domains are essential in translating AI capabilities into practical applications which enables systems to emulate human like performance with speed and accuracy. AI operates through a structured process in which large datasets are used as input. Algorithms process the data, detect patterns and train models to predict outcomes. The algorithms are refined though iterations to improve results. Based on capabilities, AI is also categorized into three types: artificial narrow intelligence (ANI), artificial general intelligence (AGI) and artificial super intelligence (ASI). ANI also known as Weak AI, is designed to perform specific tasks within a narrow scope using predefined objectives such as self driving vehicles, chess game or chatbots. AGI or strong AI, is expected to reach human level intelligence by possessing cognitive abilities to perform intellectual tasks without relying on humans (Borana, 2016; Wang & Siau, 2019). Looking further ahead, super intelligence (ASI) represents hypothetical stage where machines become fully autonomous and surpass human beings in reasoning, learning, communication and decision making (Kou & Lu, 2025). While narrow AI is already deployed across many areas, the other forms of AI remain theoretical and are yet to be realized. Understanding these distinctions is essential for assessing the current capabilities and future trajectory of AI.

2.1.1 Role of AI In Law Enforcement

The confluence of law enforcement and AI can reshape the provision of public safety through innovative methods of crime prevention, technology and proactive data driven policing. For instance, a system may allow police to feed data from past crimes (time, type and location) into an AI model. The model analyzes the data, find patterns that reveal likely times and places for future crimes. This helps predict high risk areas and supports efficient deployment of resources. This approach falls under the subfield of AI known as machine learning which makes models to learn from large volumes of data based on experience without being explicitly programmed for each scenario. Mahesh (2020) did a review study on various machine learning (ML) algorithms used by computers to extract relevant information. The study paper explained the functioning of supervised machine learning which uses labeled data, unsupervised learning which handles unlabeled data and reinforcement learning which is processed through rewards and feedback. Another form of artificial intelligence, deep learning (DL) is a subset of machine learning that uses advanced neural networks with multiple hidden layers to automatically learn representations from raw data (Janiesch et al., 2021). It is effective for handling large, high dimensional datasets such as text, audio, speech, images, and video, often outperforming traditional ML algorithms.

A recent systematic review (from 2010 to 2022) conducted by Jenga et al. (2023) examined the application of machine learning algorithms in crime prediction and analysis with the aim of supporting law enforcement agencies in crime prevention. The research found that prior studies have pursued several objectives, particularly suspect prediction, novel crime prediction, social media crime prediction, crime patten mapping and spatio temporal analysis of hotspots. The review identifies distinct ML algorithms based on their performance. Artificial neural networks were the most frequently employed followed by decision tree based models, K nearest neighbour, and regression algorithms. The authors suggest that developing a focused prediction

models using actual crime data from specific areas can enhance forecasting precision and deepen insights into criminal activity patterns. Notably, predominant reliance on supervised machine learning underscores the need for future research to explore unsupervised methods in crime prediction contexts. Another study analyzed the existing literature on crime prediction using machine learning, deep learning, and their integration with natural language processing, an area previously underexplored in research (Mandalapu et al., 2023). The paper demonstrates how these computational methods can uncover hidden patterns and contributing factors in criminal activities. It discusses recent advancements in the field, emphasizing the ability of machine learning and deep learning to process large scale data from social media, online platforms, and surveillance footage. It also notes the development of real time crime predictive models and the integration of these algorithms with wearable devices (bodycams and smartwatches) to enhance data collection and analysis. This innovative approach opens new avenues for policing. Mussiraliyeva and Baispay (2024) explored the potential of integrating machine learning into crime analysis to generate meaningful insights. They substantiate the importance of ML techniques in improving crime prevention. The research compares the performance of traditional and advanced machine learning models in classifying crime related text data. The proposed model follows a structured framework that includes raw data collection, preprocessing, data splitting, ML model training, classification, and database integration. The results show that advanced machine learning models, especially deep learning architectures, perform well in detecting patterns in textual data and distinguishing between types of crime content. Like earlier research, this study also acknowledges the promise of Advance neural network models in crime analysis. It concludes that precise classification of crime related text data helps in understanding of criminal trends and supports the design of targeted interventions to reduce emerging threats.

A transformative advancement in law enforcement is computer vision, encompassing technologies e.g. face recognition, vehicle number plate recognition, image segmentation and motion tracking (Joshi et al., 2024; Singh et al., 2023). It uses image datasets to train artificial intelligence systems for object recognition and visual analysis. In this process, labeled images with descriptive annotations train a machine learning model. The model identifies and extracts visual features. This allows it to classify the contents of images accurately. Once trained, the model can process new images and predict the objects they contain. This is called image classification. In addition, object detection locates specific items within an image by drawing bounding boxes around them. When combined with other AI algorithms, computer vision increases efficiency and accuracy that help law enforcement detecting criminal suspects quickly.

Recent research has demonstrated the advantages of computer vision in improving traffic management and promoting road safety to uphold public order. Borah et al. (2024) developed an automated system powered by computer vision and deep learning models to detect helmets and recognize license plates in real time so that authorities can effectively enforce traffic regulations. Other studies have proposed that such systems can also identify traffic signal violations, monitor live traffic conditions, and estimate vehicle speed since they rely on computer vision techniques (Uvais et al., 2023; Vyas, 2025).

Beyond traffic applications, Talha et al. (2022) developed a violent activity detection system based on computer vision and deep learning techniques to monitor the physical movements of individuals in public spaces. The model was trained on a diverse dataset comprising violent and nonviolent clips from real CCTV footage, hockey fights, and film scenes. Although the study demonstrated promising results, it lacked a detailed discussion of the alert mechanism. Moreover, the authors proposed future enhancements such as combining violence and weapon detection system, detecting metal via night vision and thermal cameras, and distinguishing

between armed civilians and police officers. In comparison, Mukto et al. (2024) provide a broader framework for automated crime monitoring systems that extends beyond violence detection. In their model, computer vision plays a critical role in detecting facial features, recognizing violent behavioural patterns, and identifying the presence of weapons. These systems employ a combination of image processing techniques and deep learning to generate alert messages for law enforcement personnel which indicate the urgency and severity of the situation. Both studies (Mukto et al., 2024; Talha et al., 2022) acknowledge several technical limitations that may reduce the effectiveness of such systems, particularly poor image quality, low light environments, night vision challenge, and concealed weapons. To address these issues, Mukto et al. (2024) recommend similar strategies, involving improved night vision processing, the use of X-ray technology for hidden weapons, integrated video and audio analysis, drone surveillance, and instant mobile alerts to ensure faster and more effective responses.

Natural Language Processing (NLP) is a field of artificial intelligence that enables machines to analyze and interpret text within a policing context. For example, NLP can extract specific entities from unstructured documents like names, places, organizations, weapon types, relationships or key terms (Dixon & Birks, 2021). Text classification categorizes documents into predefined subjects based on their content and sentiment analysis determines the tone of text e.g. neutral, positive or negative (Jim et al., 2024). Recent research shows a growing use of NLP techniques to detect hate speech crimes and monitor social media content for crime related information (Jahan & Oussalah, 2023; Sarzaeim et al., 2023). Speech recognition further extends the utility of NLP by enabling AI to hear and interpret human language through transcription of audio into text, whereas speech synthesis allows it to speak by converting written text into audible speech. Field et al. (2023) investigated the potential of automatic speech recognition (ASR) in reviewing body worn camera (BWC) footages with a focus on

detecting officer voice at traffic stops. The study evaluated the performance of multiple speech recognition models in transcribing interaction and found that officer speech was accurately transcribed. The study suggest that ASR technology can be applied to automate the review of BWC footage.

Beyond investigations, police officers also perform administrative duties alongside fieldwork. In this context, NLP can play a significant role to increase the productivity of police officials by assisting in report writing, classifying documents, translating materials and transcribing video footages, interviews and interrogation records (Dubravova et al., 2024). By automating these routine processes, police departments can reduce manual workload and allows officers to dedicate more time to core policing responsibilities.

Davies and Krame (2023) examine the integration of BWCs, drones and artificial intelligence in policing. They propose an evaluation framework centred on situational awareness, evidence collection, operational efficiency, ethical use and officers training. Using three case studies, the study assess implication of combining these technologies within the proposed framework. While the framework is theoretically grounded, the study acknowledges the need for further empirical testing to validate it practical effectiveness.

The National Institute of Justice policy brief outlines several key applications of artificial intelligence in law enforcement, including license plate recognition, predictive policing, gunshot detection, and chatbots (Redden et al., 2020). Building on these identified categories, the table 1 below supplements this overview by providing descriptions of each application along with real-world examples of companies offering such technologies.

Table 1: AI applications in Law enforcement

	AI technologies (Redden et al., 2020)	Description	Companies
1	Automatic license plate recognition (ALPR)	Uses computer vision technology to automatically read and process license plates. Search by vehicle details, time, location or date. Create hotlists, get alerts and future prediction using predictive analytics	Motorola Solutions (Vigilant VehicleManager)
2	Gunshot detection	An AI powered system uses network of acoustic sensors that locates and alerts on gunfire in real time, enables faster responses and saves lives	SoundThinking, INC (ShotSpotter)
3	Transcription	Automatically transcribe bodycam/interview audio into text and draft reports using generative AI	Axon (Draft one) (Adams et al., 2024)
4	Chatbots	AI chatbot kiosk allows the public to report crimes, suspicious activities, or emergencies directly to law enforcement, or ask for help via automated voice interaction	Omnie AI (BobbyBot) (Bradford et al., 2025)
5	Predictive Analytics	Uses criminal databases to identify hotspots, detect patterns and predict crime	PredPol, Plantir (Mohsin, 2024)
6	Autonomous Robotics	AI-powered robots support police operations, with sensors, cameras, and real time communication tools for autonomous or remote-controlled tasks.	Knightscope (K5 Security Robot) One Way (APV-S)

2.2 AI and Islamabad Capital Territory Police

The development of artificial intelligence (AI) in Pakistan's public sector remains at a nascent stage. According to the Government AI Readiness Index 2024, Pakistan scored 40.47, ranking 109th out of 188 countries across three key pillars of government strategy, technology sector capacity, and data infrastructure. This places Pakistan behind its regional counterparts, notably India, which leads the region at 46th, followed by Bangladesh (80th) and Sri Lanka (85th) (Oxford Insights, 2024). Recognizing this disparity, the Government of Pakistan has prioritized integrating AI and other advanced technologies into key sectors. This focus aims to spur innovation, boost productivity, improve public services and sharpen the nation's global competitiveness.

In 2023, Pakistan introduced its first draft of a national artificial intelligence (AI) policy as a foundation for country's AI strategy and invited stakeholders feedback for further refinement (Siddiqui, 2024). Key initiatives to advance AI include the formation of the national task force on AI, the establishment of the national centre for artificial intelligence (NCAI), special technology zones and IT parks, Presidential initiative for artificial intelligence and computing and the creation of Sino-Pak Centre for Artificial Intelligence (Nazir, 2023). Additional efforts include Digital Pakistan Policy, Uraan Pakistan project, various research centers, academic degree programs, vocational trainings, and multiple AI focused schemes. These measures reflect Pakistan's broader efforts to lay the groundwork for a national AI ecosystem and promote collaboration among academia, industry, and government to accelerate AI readiness. Pakistan is gradually progressing in AI adoption touching different sectors through combined contributions from the public and private sector, educational institutions, and global partnerships.

Within this evolving AI landscape, the adoption of artificial intelligence in law enforcement across Pakistan is in its infancy form. A few LEAs are undertaking small scale initiatives to

explore its opportunities. The Islamabad Capital Territory Police exemplifies this shift and exploring AI technologies to modernize procedures, improve effectiveness, and respond to high crime rates. The Islamabad Capital Territory (ICT) Police was formed in 1981 and functions through 5 main divisions, which are security, law and order, operations, logistics, and the Safe city. Twenty-nine police stations operate within its jurisdiction that covers nearly 2.36 million residents. As the capital of Pakistan, Islamabad holds strategic importance, hosting key government offices, foreign embassies, and high profile national and international events. This critical status necessitates robust technology-based law enforcement mechanisms. Accordingly, Islamabad Police is responsible for maintaining Law and Order, preventing and investigating crimes, regulating traffic and ensuring safe public environment.

Over the years, policing in Pakistan has transitioned from the pre partition origins to new forms shaped by successive governments following independence. Initially the system was governed under the obsolete Police Act of 1861 which remained in force across regions such as ICT, Sindh and Baluchistan (Salman et al., 2023). Later, Police Order 2002 was introduced and adopted by Punjab police, and Khyber Pakhtunkhwa subsequently enacted the Police Act 2017 to reform its policing structure (Khan, 2020). As global dependence on advanced technology continues to grow, law enforcement agencies (LEAs) in Pakistan are also moving towards digital transformation. Police departments across the country are placing greater emphasis on modernizing infrastructure, improving training programs, building trust with communities, and raising the bar through technology led policing. In line with the trend, the Islamabad Capital Territory (ICT) Police has embraced digital tools and modern technologies into its operations.

- **Safe City Project:**

The Islamabad Safe City Project marks a significant leap toward integrating digital technology into policing practices in Pakistan. Launched in 2016, the initiative introduced an extensive network of surveillance cameras with over 2,500 CCTV units currently active. These cameras

are strategically placed to cover traffic, entry and exit routes, residential zones, commercial hubs, and key government sites (Tanoli, 2016). The system provides live visual data to support real time monitoring and facilitating prompt action in case of emergencies or criminal incidents. This project illustrates how surveillance is being harnessed as a digital weapon for urban safety and preventing crime. The Safe City infrastructure supports a wide array of functions including surveillance, patrolling assistance, criminal investigations, crime mapping, traffic management, 15 operations, and upholding the law (Islamabad Police, n.d.). As command and control centre, Safe City system is fully embedded in the day-to-day activities of ICT police departments and stations, ensuring consistent coordination and involvement in every aspect of policing.

- **Facial and Vehicle Recognition:**

The backend of the Safe City Project supports vehicle management systems and an automatic number plate recognition (ANPR) facility to track vehicles, along with centralized data hubs for policing information and crime analysis. It also includes intelligent video surveillance systems that enable facial recognition technology (FRT) and anomaly detection in public areas. The AI-based ANPR system uses cutting edge technology to automatically capture and record vehicle license plate information which makes it possible to efficiently monitor and track vehicles connected to any crime. Recently, this technology has also been employed to generate AI powered electronic challans (APP, 2024). When the system detects a traffic violation or unpaid fines, it triggers an alert and automatically issues an e-challan which is then sent directly it to the violator's registered address. This system promotes road safety and encourages greater compliance with traffic regulations.

Another AI technology used by ICT Police is face recognition which matches the visual features of individuals with existing databases. This automatic identification facilitates crime prevention and supports criminal investigations through analyzing images and cctv footages.

Approximately 700 AI enabled cameras are currently in operation (Asghar, 2025). These systems are designed to identify suspects, locate stolen vehicles, and monitor high risk areas.

- **Smart Cars, Drones and Emergency Response:**

ICT Police have also been deployed AI driven smart cars connected to ANPR, FRT and other advanced tools linked with central criminal databases (Islamabad Police, 2023). These vehicles streamline patrolling, suspect identification and investigations by automatically acquiring relevant data. Key functions include issuing instant alerts for e-challan defaulters, matching suspect descriptions with facial recognition outputs, and notifying field team about incidents in real time. Islamabad Police also acquired drones to obtain a bird's eye view for crowd management, and rescue operations. Pukaar 15 emergency helpline, along with other ICT police emergency services, also works under the Safe City system. This centralized setup helps first responders react faster to public complaints.

- **Predictive Policing:**

The Crime Analytics and Smart Policing in Pakistan (CASPP) project, a nationwide initiative by Ministry of IT & Telecom and Punjab Information Technology Board (PITB) seeks to reform traditional policing system by introducing unified, integrated digital platform leading to seamless inter provincial coordination. The objective of the project manifests a shift toward predictive policing through implementation of overarching analytics system and technology in police departments. Under this project, several technological systems were introduced that consist of Complaints Management System, Police Station Record Management (PSRMS), Criminal Record Office (CRO), Police khidmat Markaz, Hotel Eye, Tenant registration system, Human Resource Management system (Zaafir, 2022). Smart Policing Unit (SPU) was also established by National Police Bureau whose main purpose is combining artificial intelligence, surveillance technologies and data analytics to prevent crime and increase efficiency in

policing (National Police Bureau, n.d.). ICT police currently employ crime hotspot mapping as a part of their strategy and are now moving towards predictive policing that forecast future criminal activity by analyzing past patterns.

Featured on YouTube channel of GNN News, an ICT Police officer explained the working of “Safe City's Hunch Lab", an in-house developed software that processes daily emergency (15) call data. It examines information based on crime type, location, day, date and time to study crime patterns and pinpoint emerging hotspots (GNN, 2025). This evaluation provides actionable intelligence that help police officers strategize their patrolling plans for more effective and efficient crime control. The officer also shared a real world example in which the lab accurately anticipated likely route, time, and modus operandi of a criminal group based on historical data. Pre-emptive action was taken by deploying undercover teams which led to the interception of suspects exactly at the expected location and time. The officer further emphasized that predictive analysis has substantially decreased crime rates by targeted patrolling.

In another video clip, the police officer on Islamabad Police official channel elaborated that the Hunch Lab applies a backtracking mechanism to conduct predictive crime analysis after a series of similar incidents (Islamabad Police, 2025). As a result, law enforcement has been able to build 73 gang personas and several arrests have been made in select cases based on this profiling. This initiative shows how police in Islamabad have started using predictive policing to take timely action. It also highlights how such practices can improve the way police gather and use information to keep communities safe.

While facial recognition and number plate identification systems have been mentioned in the context of Islamabad Police, there is limited documented evidence on the adoption of predictive policing or other advanced AI technologies by the ICT police. In contrast, Punjab Police has demonstrated greater transparency disclosing relevant information regarding the use of AI

tools. The Punjab Safe City Authority (PSCA) has actively implemented a range of AI driven solutions which comprised of intelligent traffic management, AI-powered surveillance cameras and AI number plate recognition. Moreover, the PSCA has incorporated predictive policing algorithms and object detection models. These technologies enable the detection of activities such as fight and mob detection, beggar identification, VVIP movement as well as the recognition of weapons and sticks (Punjab Safe Cities Authority, n.d.). The PITB has also played a key role by partnering with Punjab Police to support the design, development, and implementation of these AI based policing solutions. Apart from these, Islamabad Police has also adopted the model police station infrastructure and introduced multiple e-services options to improve the citizens access and service delivery. Several initiatives were taken to improve the performance of the policing in Pakistan to curb the security challenges. However, the fast pace of technology calls for the police department to continuously adopt and upgrade the system to tackle evolving criminal tactics.

A qualitative study by Salman et al. (2023) assessed the role of digital technologies within Islamabad Police by evaluating the implementation of management information system (MIS). Through interviews with front desk officers and analysis of public feedback, the study identified major barriers to digital adoption. These included inadequate digital infrastructure, low cybersecurity awareness, weak data protection measures, insufficient human resource capacity, and low public awareness regarding digital complaint system. The findings also concluded that despite improvements brought by MIS system in terms of data processing, transparency, and investigation efficiency, its effectiveness is challenged by procedural legal barriers, institutional inertia, and police culture resistant to deep technological integration.

In a related context, Mohsin (2024) examined the criminal investigation methods and forensics practices of the Punjab Police through the lens of integrated AI based technologies while also exploring barriers to their adoption. Drawing on qualitative interviews with ten investigating

officers (IOs) across five district of Punjab, the study offers direct insights into systemic challenges such as restricted funding, outdated investigative techniques, and poor forensic handling. The findings reveal that investigations often depend on complainant led narratives, lack of training in modern tools, and remain largely unfamiliar with AI technologies (e.g. facial recognition, ANPR) despite using CCTV footages, CDR data and geo fencing. However, the credibility of the study is weakened by narrow sample and exclusion of other stakeholders which undermines the generalizability of its conclusion. Moreover, while the paper references AI adoption, it fails to evaluate existing AI applications or address ethical concerns and international perspectives. This omission renders the discussion being anecdotal and overly centred on procedural shortcomings within investigative process rather than offering comprehensive view of AI in policing.

Ali (2024) discusses the application of machine learning for forecasting crime. It utilizes primary data extracted from Safe City's 15 call records of theft incidents across various districts of Punjab during 2022. The findings reveal fluctuations and noticeable patterns in crime occurrence across different days, underscores the significance of implementing crime prevention strategies to efficiently curb crime incidents. Similarly, Ferooz et al. (2022) conducted a study in Lahore and collected a crime data set, specifically FIRs, from three police stations. The study employed an unsupervised data mining technique to extract frequent crime patterns and identify associations between crime type, day, time, and location. These patterns were visualized to provide crucial assistance to law enforcement in solving crime cases. Rashid (2023) explores how artificial intelligence can help counter online extremism in Pakistan by enabling the detection of extremist content, prediction of users at risk of exposure and facilitating timely interventions.

Although there are pilot projects such as Safe City initiatives, there is minimal scholarly inquiry into how AI tools are actually integrated into daily police practices. Existing research on

policing in Pakistan is mostly centred on crime mapping (Sumra et al., 2022), public perception and ICT reforms in Punjab Police (Anjum & Rehman, 2022; Shahid et al., 2021). In the legal domain, scholars have explored the benefits of using AI in judiciary to prevent wrongful convictions through automated evidence analysis and decision support systems (Bhatti et al., 2024). Others discuss the potential of AI in making justice more transparent, inclusive and secure amidst digital literacy and access challenges (Khan et al., 2024). However, there is a distinct lack of empirical research on AI use within policing institutions regarding operational realities and institutional preparedness. This study seeks to fill this critical gap by providing context specific insights into AI based policing in Pakistan through a case study of the Islamabad Capital Territory Police and contributing to both academic understanding and policymaking in developing nations.

2.3 Risks, Ethics and Governance

AI technologies bring forward dilemmas that have no straightforward answers. For instance, in the case of autonomous vehicles, if an AI powered car is faced with a split second decision to either hit one person or swerve and hit another then who should be saved? Who is morally more valuable, and who is held accountable if the algorithm makes the wrong call? These ethical paradoxes are not exclusive to cars; similar concerns apply to predictive policing systems. If an AI predicts someone is likely to commit a crime, does the system act on prediction or presume innocence? The blurred lines between right and wrong, prevention and punishment, human bias and machine logic reflect a deeper uncertainty which is not about what AI can do, but about what it should do. Such unresolved questions raise doubts about ethical responsibility, legal accountability, and the limits of algorithmic decision making.

Predictive policing is often associated with the black box problem. Meijer and Wessels (2019) highlight that major drawback is the lack of transparency in these model. This further causes accountability issues especially when police follow algorithmic decisions without fully

understanding them. If input data is already biased, then it can also lead to discrimination, social inequalities and threaten citizen privacy.

In predictive policing, opaque algorithms make decisions that neither officers nor citizens understand and increasing the risk of blind reliance on data. A key issue is the inability of AI systems to explain its decision making process which undermines transparency and accountability (Borana, 2016). This places responsibility on the police department deploying such technologies to ensure transparent processes and proper documentation of system design, data sources and operational mechanism.

This concern becomes more urgent when considered in the context of real world incidents. In 2020, the killing of George Floyd by a white police officer in Minnesota led to global protests under the Black Lives Matter movement. The case exposed critical failures in policing systems regarding the misuse of force, accountability and racial bias. It sparked public debate and reform demands around discrimination against ethnic minorities. This incident has become a foundational reference in discussions on AI and law enforcement. If AI systems are trained on biased historical data, they can also reinforce discriminatory patterns.

As large volumes of data are gathered on a daily basis, data quality becomes a critical factor (Wang & Siau, 2019). For example, there is a risk that incomplete, outdated, or inaccurately labelled records can distort outcomes, leading to certain individuals or communities being unfairly targeted based on flawed or unrepresentative data points. Another study takes similar concerns into account and emphasizes that biases must be addressed at the stage of training data (Ijiga et al., 2024). The study recommends conducting regular bias audits and implementing a monitoring and evaluation framework for the accuracy of AI systems.

Governments are responsible for upholding the civil rights of their citizens including the right to security, equal treatment, and protection under the law. The deployment of AI technologies

in law enforcement must be carefully evaluated across the spectrum of civil rights, and human rights. Right to privacy guard individuals against unwarranted surveillance and freedom from discrimination ensure that AI does not replicate social biases (Bukhari & Anwar, 2025). Human rights provide a universal baseline to prevent AI enabled violations of dignity, freedom, and life.

Along with data quality, data security is equally essential. In policing, the misuse of sensitive information can pose serious risks as such data can cause harm if it falls into the wrong hands or is not protected by adequate security measures (Wang & Siau, 2019). This makes law enforcement systems a potential target for cyberattacks and unauthorized access. While current AI systems operate under artificial narrow intelligence, ongoing advancements are steadily pushing the boundaries toward more autonomous systems. Technologies such as unmanned aerial vehicles, automated decision making, patrolling robots etc, signal a future where machines may increasingly act without direct human intervention. This growing autonomy introduces a serious threat to societal harm, human oversight and control (Bengio et al., 2024)

2.3.1 AI Governance

With cutting edge innovations reshaping multiple sectors, the governance of AI has risen to the top of the global agenda. Several international organizations and governments have introduced guiding principles to promote ethical and responsible use of AI systems. Global frameworks such as OECD AI Principles and AI Ethics Guidelines (UNESCO) are nonbinding yet provide a strong foundation for AI governance. These frameworks embed core elements like transparency, human centered values, monitoring and evaluation, and well-structured data ecosystems. While they cover general guidelines, few explicitly address law enforcement contexts.

Table 2 : Global AI governance

Name	Description/ focus	Citation
Universal Guidelines for AI	Emphasize transparency, including the right to understand the reasoning behind AI decisions and the obligation for public awareness of AI systems. It stresses fairness, data quality, evaluation and accountability, public safety while discouraging identifiers or scores that enable broad tracking and profiling of individuals.	(Voice, 2018)
OECD AI Principles	Focus on trustworthy AI, promoting equitable growth, protecting civil and human rights. Emphasis is placed on upholding rule of law, fairness, data protection, privacy, transparency, and accountability along with the need for AI systems to be secure and reliable.	(OECD, 2024)
UNESCO's Recommendation on the Ethics of Artificial Intelligence	Built on human rights, diversity and inclusion, social and environmental justice. Other key areas include safety, privacy, data protection, responsibility, transparency, sustainability, human oversight, public awareness, non-discrimination	(UNESCO, 2022)
EU AI ACT	Binding legal framework classifying AI systems by risk level and imposes corresponding obligations on developers, deployers, and regulators especially for high-risk systems used in domains such as law enforcement, education, healthcare etc.	(European Union, 2024)
Blueprint for an AI Bill of Rights	Five principles: safe and effective systems, protection from discrimination caused by algorithms, data protection, notice and explanation, human alternatives and fallback	(White House, 2022)

The Organisation for Economic Cooperation and Development [OECD] (2024) acknowledge the transformative nature of AI across sectors and its ability to reshape economies and societies. In light of both foreseeable and unforeseeable consequences, the OECD AI principles assist

countries in understanding AI systems, managing associated risks, and encouraging to integrate these considerations into policy and regulatory structures. It emphasizes long term public and private investments in AI research and development, the use of open datasets, and the importance of regulatory protocols for data sharing and protection (OECD, 2024). This reflects a broader economic agenda prioritizing growth and competitiveness. Although ethical concerns are included, they are situated within a broader strategy aimed at fostering digital ecosystems. Furthermore, flexible policy design, workforce transformation, and cross border collaboration are seen as essential to building inclusive, human centric AI environments.

UNESCO's recommendation on the Ethics of Artificial Intelligence is the first global standard instrument. It draws on values and principles, provides comprehensive policy guidance across 11 key areas including ethical governance, data policy, environmental sustainability, gender equality, culture, education, economy, and health (UNESCO, 2022). Alongside Universal Guidelines for AI, UNESCO reinforces the call to regulate AI in ways that protect individual rights and opposes the scoring systems and mass surveillance. UNESCO recommendation also outlines mechanisms for effective data governance, ensuring adequate data collection, maintaining high-quality datasets, and regulating AI systems throughout their lifecycle.

Another landmark initiative in global AI governance from European Union includes the EU AI Act alongside General Data Protection Regulation (GDPR). EU AI act is a binding legal framework for the regulation of AI systems. It categorizes AI applications into four risk tiers (unacceptable, high, limited, minimal) based on their potential to affect fundamental rights, public safety and democratic values. EU AI Act strictly prohibits certain AI practices deemed to carry unacceptable risk. These include biometric identification and categorization, emotion recognition and AI systems that manipulate human behaviour or exploit vulnerable populations (European Union, 2024). Of relevance to policing, the AI Act restricts the use of AI for predictive policing, remote biometric and extraction of facial images from CCTV feeds and

online sources or any other AI systems that could infringe on fundamental rights. Exceptions are permitted only under certain circumstances where AI can be used for public interest and even then, strict compliance, registration, and oversight mechanisms must be followed. All AI systems must be registered in an EU wide database and are subject to ongoing monitoring by designated regulatory authorities.

Before the AI Act, General Data Protection Regulation (GDPR) enacted in 2018 shaped the global view of personal data protection. It served as a foundational framework that later informed and supported the development of the AI Act. Given that many AI systems rely heavily on data processing, it was essential to first establish legal protection for personal data. The GDPR introduced clear rules on how data can be ethically collected, processed, and stored to maintain privacy rights (European Union, 2016). These principles and obligations also apply to the design and implementation of AI technologies under the AI Act. Overall, both documents stand as comprehensive regulations for other countries as well, emphasizing that responsible management of personal data is crucial for safe and effective AI systems.

In the United States, the Blueprint for an AI Bill of Rights is a guide designed to protect the American people from harmful consequences of automated systems. The Blueprint takes into account the existing legal protections and regulatory requirements. The recommended principles seek to uphold civil rights, liberties, and equitable access to essential services such as healthcare, education, financial systems, and public benefits. It highlights the importance of safety by requiring system testing, risk identification, independent oversight mechanisms, and the use of high-quality representative datasets. It also focuses on algorithmic accountability, encouraging proactive measures to mitigate disparities and promote equitable access to automated systems across all segments of society. Furthermore, it calls for clear documentation and explanations to guarantee transparency in how automated decisions are made. One of its distinctive features is the right for individuals to choose human intervention over automated

systems which preserves user autonomy. However, the absence of a unified federal AI regulation in the U.S. has resulted in a fragmented approach where individual states have taken the lead in crafting their own AI related laws and policies.

Different countries and organizations have introduced their own AI regulations based on their unique priorities, risks, and governance capacities. For the world to remain a place of peace, justice, and safety, international cooperation is essential. A shared commitment to responsible AI use requires countries to learn from one another, protect human dignity and support innovation.

2.4 International Examples

As artificial intelligence transforms law enforcement globally, many countries have adopted AI tools to enhance crime prevention and policing efficiency. Examining international cases provides critical lessons for understanding the advantages and limitations of AI policing in Pakistan.

Dubai: The UAE has a dedicated Ministry of AI, Digital Economy, and Remote Work to develop policies and regulations that boost competitiveness and economic growth. Its "National AI Strategy 2031" seeks to make the UAE a global leader by investing in AI for energy, logistics, healthcare, and public services. Dubai Police (2025) has become the first police force in the region to receive ISO 42001 certification which is the international standard for Artificial Intelligence Management Systems (AIMS). Dubai has emerged as a leading example in integrating artificial intelligence (AI) into police departments. Dubai Police aims to enhance operational efficiency, predictive capability, and public safety. They have deployed AI across a range of systems, including predictive analytics for crime hotspots, AI powered surveillance through the Oyoon project, facial recognition, and data driven investigations (Abdulrahim, 2024; Al-Shamsi & Ahmad, 2024). These technologies have enabled a shift from

reactive policing to proactive (Alkhazraji & Yahya, 2024). According to Haidar (2025), Dubai Police use AI into 29 areas including both operations and administration. One prominent innovation is Dubai Police's showcase of a driverless, AI driven patrol vehicle equipped with facial recognition, an automated license plate reader (ALPR), and a drone capable of accessing areas where the car can not reach easily (NDTV, 2023). Another notable example is "Amna," a virtual officer who holds the rank of first lieutenant. It provides information and assistance in both Arabic and English. The Smart Police Stations run 24/7 with over 40 automated services without human staff (Haidar, 2025). However, while the technological capacity is advanced, the city's model also addressing concerns around algorithmic bias, data privacy, and ethical oversight through efforts of Digital Transformation and Artificial Intelligence Council. (Abdulrahim, 2024; Haidar, 2025). The Dubai experience highlights the transformative potential of AI in law enforcement while underscoring the importance of balancing innovation with accountability and public trust.

China: China has developed one of the world's most expansive and advanced AI surveillance ecosystems that uses artificial intelligence to enforce public order. Central to this model are technologies such as facial recognition, predictive policing, big data analytics, biometric tracking, and real time monitoring which are deployed at scale through programs like Skynet and Sharp Eyes (Bukhari & Anwar, 2025). In China, predictive policing covers both crime forecasting and real time monitoring. Suzhou police use crime prediction system that analyzes around 13 million records of criminal data and 780 million data entries from commercial and other areas using 382 variables (e.g. population, weather, sunset etc) to aid proactive prevention (Guo & Yang, 2025). In Covid-19, China's approach to managing public health emergencies has been also shaped by this system. These tools are not only used for routine public safety but also for political repression where Uyghur minorities are subjected to intensive surveillance and algorithmic profiling (Meltzer et al., 2024). China's Social Credit System reinforces the

control by linking citizen behaviour to social and economic privileges. Guided by "New Generation Artificial Intelligence Development Plan", Beijing, Shanghai, and Zhejiang have implemented AI systems like AI virtual judge, intelligent criminal case assistance, big data platforms (Guo & Yang, 2025) A major example is the deployment of the "206 System" in Shanghai, an AI judicial platform designed to streamline legal procedures by automating evidence review, assessing case quality, and guiding prosecutors decisions (Wu & Lin, 2025). However, critics argue that China's AI system undermines civil and human rights particularly due to the rise of digital authoritarianism.

USA: In United States, AI driven predictive policing tools such PredPol, ShotSpotter, and Palantir Gotham have been utilized to improve crime prevention. The NYPD in 2013 created its own predictive algorithms pertaining to types of crimes for example robberies, shootings, and theft (lau, 2020). The Los Angeles (LAPD) and Chicago Police Department have also implemented similar techniques. As cited in Ersöz et al. (2025), the Chicago, New York and San Francisco crime datasets are among the most frequently used public sources for training AI models in crime prediction which makes them central to the development of U.S based predictive policing systems. Whereas, Santa Cruz became the first city to ban predictive policing in 2020 due to concerns over racial bias and civil rights followed by similar restrictions in Oakland and New Orleans (Asher-Schapiro, 2020). Policy guidance by Center for AI and Digital Policy (n.d.) along with other activists and organizations like American Civil Liberties Union (ACLU) further reflect growing institutional pushback against algorithmic policing practices due to concerns surrounding civil liberties, racial bias, and transparency.

South Korea has adopted a proactive national strategy for artificial intelligence under its agenda building the best performing digital government which includes the task of using AI to analyze criminal information for the prediction and prevention of crime (Ministry of Science and ICT, 2019). The Korean National Police Agency has developed deepfake detection

software to counter the growing threat of AI generated misinformation. Furthermore, the agency has supported the creation of language model augmented police investigation system (LAPIS). This AI crime investigation decision support system is designed to enable police officers to conduct rational and legally compliant investigative actions (Kim et al., 2024).

India has made significant progress in artificial intelligence through various initiatives. Key developments include National strategy for AI formulated by NITI Aayog, Principles for Responsible AI and Digital Personal Data Protection Act 2023 (Joshi, 2024). Practical applications span across facial recognition systems, traffic management solutions, criminal databases, alongside other tools such as Delhi crime mapping analytics and predictive system as well as "Jarvis, an AI driven surveillance used in Uttar Pradesh's prison system (Rani, 2024).

In contrast, Sri Lanka and Bangladesh are still in the early stages of leveraging AI in law enforcement. Both countries are developing national AI strategies and related policies. Notably, Sri Lanka enacted the Personal Data Protection Act in 2022. However, AI implementation in the policing is evolving and scholars in both countries are actively exploring the role of AI in enhancing public safety and justice delivery (Nobel et al., 2024; Perera et al., 2025).

To sum up, this chapter provided review of existing scholarship on the role of AI in shaping law enforcement practices, identified key applications areas, and assessed emerging risks associated with its deployment. It outlined global mechanisms for managing the challenges and provided international use cases of AI in policing. The chapter also explored the Islamabad Capital Territory Police, highlighting current developments and academic engagement. Although some progress is evident, this study addresses the gap in localized research on AI readiness for policing in Islamabad.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

In the research process, research design functions as an essential component which includes research methods, sampling technique, data collection, and data analysis (Khan, 2022). It is a methodological framework used to study a specific problem, enhancing understanding and knowledge through decisions shaped by researchers' philosophical worldview, research strategies and approaches to data collection and analysis (Creswell, 2008).

3.2 Research Philosophy

A philosophical worldview refers to the researcher's understanding of reality and the process by which knowledge is developed and interpreted. This study adopts an interpretivist philosophical position, viewing reality as constructed by the actions and perception of social actors. The researcher gives priority to interpretivism over positivism, focusing less on objective aspects and more on subjective meanings to understand how stakeholders articulate the use of AI in policing strategies. In this paradigm, AI powered technologies and policing methods are seen as socially produced; their success or failure in law enforcement depends on the working and perspectives of the stakeholders involved. Furthermore, this research takes a social constructivist ontological stance, suggesting that reality is not fixed but is socially constructed (Saunders, Lewis, & Thornhill, 2009). By immersing in stakeholders perspectives, the researcher aims to gain deeper insights into how AI driven solutions in crime prevention are understood and implemented, interpreting their viewpoints on the prospects and risks, and contextualizing the findings within the field.

3.3 Research Strategy

Qualitative research strategy is used in this current study for an exploration of the landscape of ICT police working with the tools of technology amid challenges of high population density and a surge in crime. Law enforcement in Pakistan is perceived to lack sufficient technological integration, training, and awareness of AI applications. Interviews serve as the modus operandi of the data collection. These interviews involve key stakeholders who are directly engaged in policing to capture their views on existing practices, attitudes towards AI in crime prevention, and expectations for the future. This research undertakes an inductive approach to generate a theory grounded in the analysis of collected data rather than building on a preexisting one. Therefore, qualitative research was selected to go into details of the practical realities at the intersection of technology and policing.

3.4 Sampling Technique

The target population for this inquiry is the Islamabad Capital Territory (ICT) Police Officers who represent a hierarchy from senior to junior ranks. The inclusion of these ranks at both managerial and operational level reflects a representative sample and covers important aspects of the study. Senior officers in managerial roles provide strategic leadership and work closely with subordinates in the fieldwork e.g. investigating and detecting crime, emergency response, surveillance, intelligence collection and patrolling. Each rank has specific tasks that are all connected with the overarching goal of crime prevention and detection which is the core focus of this research. In addition to police officers, the study incorporates insights from policymakers and subject matter experts to fully explore the risks and opportunities of artificial intelligence use in law enforcement. This strategy allows for a more nuanced view of AI's potential impact on crime prevention and operational efficiency, addressing both practical and theoretical considerations in law enforcement. The population has been identified; thus, the next step is sampling.

The nonprobability sampling technique is used to make sure that people are purposefully chosen with relevant information related to the nature of the current study. Purposive sampling is employed to interview participants with the necessary knowledge and expertise to answer research questions. These participants include police personnel, policymakers, and AI experts. The given sampling technique is suitable for qualitative research as it allows the researcher to focus on obtaining rich data from individuals directly involved in crime prevention and detection from various police stations. The selected stations include Karachi Company Police Station, Industrial Area Police Station, Kohsar Police Station, Shehzad Town Police Station, Khanna Police Station, and Aabpara Police Station, with a focus on crime incidents (street crime, robberies, auto vehicle theft) and repeated mentions in the newspaper from April 2024 to November 2024 (Sher, 2024a, 2024b, 2024c). To ensure sample representation and capture varying opinions, a mix of high ranking and junior officers are selected. Also, other participants are directly identified and recruited through professional networks, institutional contacts or government bodies to locate experts involved in AI policymaking and its application.

In total, 24 interviews were carried out for this study. Of these, 17 were from the Islamabad Police department. This included 11 interviews with station personnel at the ranks of Inspector, Sub Inspector, and Assistant Sub Inspector. Six police stations were chosen with two based in rural areas and rest in urban setting. Four interviews were conducted with Senior Superintendent of Police (SSP), Deputy Superintendents (DSP), an Assistant Superintendent (ASP), while two were held with senior officers responsible for overseeing technology operations within the ICTP. Remaining interviews were conducted with external stakeholders. Data collection continued until sufficient information is gathered and saturation is achieved. For reliability of the findings, I have engaged in regular consultations with my supervisor throughout the process, allowing for continuous feedback and validation of the research process.

Table 3: Sample details

S. No	Stakeholders	No. of Interviews
1	Police Station personnel	11
2	Senior Police Officers	4
3	Specialist Officers (IT related)	2
4	National Police Bureau	2
5	Ministry of Interior & Ministry of IT	3
6	AI Experts (Academic, AI CoE)	2
		Total=24

3.5 Data Collection

This research collects qualitative data from both primary and secondary sources to have a well rounded perspective. In-depth interviews with police officers, experts, and policy makers are used to gather first hand data for tailored information. For secondary data, international reports, scholarly articles, policy documents and guidelines are critically reviewed. The use of these sources carefully managed the credibility and rigor of the research. By combining primary and secondary data from relevant quarters, this approach facilitates a detailed exploration of the research topic.

Khan (2022) outlines a structured four step process for primary data collection. It starts with the design of instruments, followed by organizing and conducting fieldwork, and concluding with effective data management.

The data collection instrument adds semi structured interview format, both open ended and closed ended questions to allow flexibility and depth in responses. Three separate interview guides were developed for different categories of participants to ensure relevance and clarity

in each context. The guides were informed by a thorough review of literature and were carefully aligned with the objectives of the thesis.

Interviews with police personnel were conducted face to face contingent on their availability and convenience. For other respondents, both one-on one and telephone interviews were offered to accommodate individual preferences and facilitate timely participation.

3.5.1 Unit of Data Collection

- Participants: Police Officers, Policy Makers, and Technological Specialists
- Global Reports
- Policies, Guidelines
- Literature

3.5.2 Research Site

Islamabad Capital Territory Police is used as a case study for the fieldwork. Islamabad is selected as it is the capital of Pakistan and faces difficult challenges for law enforcement here due to its jurisdictional and administrative responsibilities. Despite being a relatively small force, it handles critical tasks including prevention of federal crimes, security of government offices, embassies, and diplomats as well as managing protests, traffic and national security. These responsibilities mirror broader issues making Islamabad an ideal setting to explore AI integration opportunities and challenges within law enforcement. Also, Islamabad's smaller scale offers the possibility to serve as a pilot area for enabling the testing and refinement of AI powered solutions. The findings could subsequently inform policy reforms and replication of successful strategies across other regions of the country. The study followed a fixed time horizon for conducting interviews, scheduled between April 2025 and May 2025.

3.5.3 Ethics and limitations

In adherence to research ethics, a formal request was submitted and approved by Inspector General of Police Islamabad. Each participant received information sheet and gave consent prior to the interview. Participants were assured of the confidentiality and anonymity of their responses and clearly informed that their identities would not be disclosed in order to protect their privacy. Although selected quotations are used in the findings to support the analysis, all identifying information has been removed to maintain anonymity and uphold ethical standards.

The data collection process encountered multiple constraints. First, obtaining administrative approvals from relevant authorities required considerable time which delayed the initial access to police officers. Second, scheduling interviews with police personnel proved challenging due to their unpredictable and demanding work routines. As a result, several interviews were rescheduled many times and conducted within limited timeframes that restricts opportunities for focused engagement. Moreover, since the police department is an institution with a sensitive operational environment, some participants appeared hesitant to share detailed information due to concerns about internal protocols and potential professional consequences.

3.6 Data Analysis

As audio recordings were not permitted in some police stations, detailed field notes were taken during the interviews. In cases where recordings were allowed, transcripts were cross checked with notes for accuracy. Thematic analysis was used to interpret primary data in this research. The analysis followed Braun and Clarke (2006) method which offers flexibility in identifying meaningful patterns in the qualitative data.

The data analysis process began with multiple readings of the field notes and transcripts to develop familiarity and understanding of the content. In the second step, manual coding was done by highlighting and labelling key words and phrases. Recurring ideas and expressions

were fall under initial codes. Similar codes were then refined into sub themes, which were later categorised in broader themes. The whole process was iterative and interpretive to ensure that final themes were grounded in the data and capture significant meanings relevant to the research questions. In the last stage, the analysis was written up in a manner that presents the findings and reflects on the narrative build on the data.

Table 4: Summary of themes identified from Police

Major Themes	Sub themes
4.1 **Policing Practices**	4.1.1 Crime Prevention and Investigation Approaches 4.1.2 Resource Allocation and Prioritization 4.1.3 Operational Effectiveness and Challenges
4.2 **Tech Policing Tools**	4.2.1 Digital Surveillance 4.2.2 Digital Tracing techniques
4.3 **AI Readiness in Law Enforcement**	4.3.1 AI awareness and Understanding 4.3.2 Potential AI Applications 4.3.3 Human Capital and Skills 4.3.4 Data and Infrastructure 4.3.5 Strategic Planning and Governance 4.3.6 Ethical Consideration 4.3.7 Future Vision

CHAPTER 4

FINDINGS

The engagement with key informants has revealed the emerging role of AI in policing within Pakistan. Through thematic analysis, the findings have highlighted important themes concerning the current state of policing practices in Islamabad Police along with the opportunities and challenges linked to AI driven approaches. These themes illustrate the evolving process of integrating AI technologies into the operational framework of ICT police.

This chapter presents findings drawn from both field level and officer cadre personnels. Unless specified otherwise, the term 'participants' refers to both field level and officer respondents as their responses reflected considerable thematic convergence and provide clear picture of policing in Islamabad.

4.1 Policing Practices

4.1.1 Crime Prevention and Investigation Approaches

The policing strategy of ICT police is rooted in traditional and data driven methods. The results identified key elements including patrolling, crime mapping, monitoring known offenders, digital surveillance, use of criminal database, engagement with human informants and local communities. These components form the core of Islamabad Police efforts to prevent and investigate crime. The findings indicated that crime prevention strategies have begun to incorporate data analysis and visual representation of crime patterns. Participants (field staff & officers) reported crime hotspots identification to analyze trends, patterns and areas with high risk for certain offenses. They highlighted that this notable contribution comes from Safe City which assists in crime mapping based on geospatial and temporal trends. They explained that Safe City monitors incidents reports such as robbery, mobile snatching, motorcycle theft etc., generating crime heatmaps that inform deployment decisions. This technique facilitates the

allocation of target patrolling, surveillance and focused interventions. One field level officer said, "***We do regular patrolling, raids, conduct snap checking, and deploy some special personnel in civil dresses (P3).***" When a crime hotspot is identified, patrolling in that area is increased using various resources e.g. beat patrols, dolphin/eagle squads and smart cars. Additional personnel are deployed, and Safe City cameras are activated to provide real time footages. According to them, it has proven effective in altering crime patterns and reducing recidivism. Furthermore, Participants also engage in the monitoring of habitual and high risk offenders. Even after their release from incarceration, such individuals are kept under surveillance and are subject to interrogations. In instances where renewed involvement in criminal activity is detected, they are legally apprehended once again. ***"Yes, crime hotspots are created. For example, in XYZ area we have data related to narcotics. there is a lot of drug activity. We analyse the area, and our informers also tell us where the activity is increasing. Then we conduct raids at those locations to arrest them (P3)".***

Intelligence gathering is another integral part of police functions. Field officers stressed that human informants play an important role by providing valuable information about criminal activities within their jurisdiction which supports them in prevention and detecting crime. ***"It is essential to have a 'mukhbar' who collects and provides data on a local level (P1)."*** Field officers also identified community policing as another strategy of crime prevention. They stated that public engagement and awareness are important aspects of controlling crime in society. Apart from informers, they also gather information from sources including respectable people, social circles and those who willingly help the police. ***"To handle things efficiently, Police officers must study their jurisdiction, analyze crime maps, assess public behaviour and cooperate with citizens (P1)"***

The investigation process in ICT police employ a combination of traditional approach and selective use of modern technology tools. Crime responses are typically initiated following the

occurrence of an incident which often triggered by reports received through various channels including 15 calls, public complaints or any details disseminated via social media platforms. Upon receiving such information, an official First Information Report (FIR) is registered at the respective police station to formally commence the investigative procedures.

In crime investigations, the entire criminal activity is examined from every possible angle. Participants reported that even the smallest details are carefully observed and analyzed. After reaching at the crime scene, first responders cordon off the area and look for evidence such as any weapons, fingerprints, potential DNA traces, CCTV recordings. Relevant materials are then forwarded to the National forensic agency/ Punjab forensics science agency for detailed tests. Simultaneously, the investigation proceeds by the area checking, interrogating suspects, collecting of eyewitness accounts to construct a through narrative of the actions. Participants also revealed that they checked historic crime data which is digitally available and can be retrieved with a single click using identifiers such as cnic, contact number, name and other relevant details. Additionally, participants reported the use of technical resources including CCTV photos/videos, call record, geo fencing, vehicle number and mobile phone location tracing to support suspect identification and case development. Moreover, the choice of investigation methods depends on the type of crime and circumstances of each case. For example, different approaches are used for vehicle theft, mobile snatching, murder, robbery, abduction etc.

Two participants illustrated the same real example "***Recently, a young man was abducted. We used technical tools like CCTV footage, cdr, mobile location. We did an investigation, arrested a few suspects to track down and arrest the real culprit (....) led us to the location of the dead body. We recovered the victim body and send the offender to judicial custody."***

4.1.2 Resource Allocation and Prioritization

Resource allocation within ICT Police is structured around a centralized surveillance input and decentralized coordination. Participants outlined a flow of information starting with the 15-emergency reporting and Safe City which immediately directs resources to field units such as Dolphin/ Eagle squads, patrolling officers, smart car and relevant police stations. Responses to 15 call reports usually occur within 2 -5 minutes as information is instantly shared with field staff for timely action. This framework allows for quick mobilization of personnel based on real time data and reported incidents. They consistently found this model as highly effective. For special events, resource deployment is centrally managed through police headquarters. Although, routine patrolling and related decisions are made at the individual police stations where senior officials assess local crime pattern and jurisdictional needs.

Field officers reported that crime is classified into distinct types, and each recorded separately within their respective categories including crime against persons, property and heinous crime. Murder, kidnaping for ransom, rape, dacoity etc. are prioritized due to their severity. FIRs are recorded annually, quarterly and monthly to analyze the crime trends for each police station. Resource distribution is also guided by these crime categories alongside the specialization of personnel. ***A Field level officer explained that certain cases are assigned to officers with relevant expertise (P2).*** Serious crimes like murder and sexual violence are handled by dedicated units including Homicide Investigation Unit and Special Sexual Offences Investigation Unit (SSIOU).

4.1.3 Operational Effectiveness and Challenges

While some participants believe existing policing strategies are effective, others argue there are gaps that can be improved with proper equipment and consistent efforts. The Islamabad police face distinct challenges arising from local area conditions, budget constraints,

insufficient staffing, workload and transport capacity. Participants highlighted substantial obstacles and cited that *"nafri"* (field strength) is insufficient to meet day to day policing demands. Field officers revealed that they are assigned extra assignments, overlapped roles and special duties which diverts their attention from core tasks. One of the field officer remarked that specific roles are handling *"max 80 file cases,"* reflecting an excessive administrative burden that may hamper investigative effectiveness (P2). They often have extended duty hours with no work life balance. ***"In my opinion, if we are given proper time to a case and work with interest, we can detect crime up to 95% (P1)"*** Additional concerns were raised about workforce renewal. One field officer pointed out that many police personnel are now approaching retirement and recruitment practices may not align with current staffing needs. A lack of adequate transport resources was also noted by field officers as mentioned that number, condition and fuel availability of vehicles assigned to stations is below operational requirement. They also shed light on the variations in area conditions. Rural regions create challenges for resource deployment and timely responses due to geographical spread and unique crime patterns. ***As one field officer said: "in rural areas, crime against property is more common e.g. robbery, motorcycle theft, mobile snatching (P2)".*** Response time tend to be faster in urban centres, whereas in remote areas they sometimes exceed five minutes. Language barrier, cultural differences and variations in public attitudes across jurisdictions also pose challenges which emphasize that police officers should communicate in local language to build trust and effective engagement. ***"If a foreigner causes an accident, and the officer cannot understand him, it shows a failure in communication. If we cannot explain the situation ourselves, we must find someone who can help explain. That's how one should manage a situation on the spot (P1)"*** Field officers unanimously agreed that limited government funding also affects resource availability for policing efforts. It is important to note that some field officers were initially reluctant to highlight challenges openly. When asked about improvements, field

officers shared suggestions like heli medical support for emergency response. Field participant emphasized the need for forensic facilities, other recommended expanding the safe city system to the station level.

4.2 Tech Policing Tools

4.2.1 Digital Surveillance

Islamabad Police are increasingly utilizing digital surveillance technologies to aid core policing functions. CCTV footage is an essential part of the surveillance infrastructure in Islamabad Police. Participants highlighted that both Safe City camera system and private CCTV networks help in preventing crime, suspect identification and investigation processes. Safe City plays a central role in this regard, providing a vast network of strategically placed cameras across the city with live monitoring and recorded footage. They reported that Safe City footage is frequently reviewed during investigations to conduct route checks, trace the clothes worn by suspects, match facial features with existing database, track their movements and vehicles, identify weapons used in crime, gather evidence and compare with previous CCTV videos. One field officer quoted, ***"because of safe city cameras, now we are able to recover bikes that were stolen a year ago (P7)". "Safe city cctv footages are very helpful; it provides us clear map to understand the criminals (P8)"***

One officer pointed out that at certain points the current CCTV features are limited and the footage is sometimes of low quality. He emphasized that integrating FR technology into CCTV would be very helpful especially for managing law and order situations (Officer 2). Another officer highlighted that PTZ cameras, bullet cameras, traffic signal cameras with ALPR technology are installed and in use at some places. (officer 4).

Participants acknowledged that body worn cameras (BWC) are actively used in field operations, patrol duties, and at crime scenes. These devices record video/audio evidence which

is connected to a control system for future reference. Drone cameras are also deployed during major events and public gathering. Participants mentioned that Safe City use drones to monitor Muharram processions, Eid celebrations, livestock markets (Bakra Mandi), traffic, protests, law and order situation and in specific cases such as land disputes or illegal occupation. The drones provide live visual feeds, improving situational awareness and evidence collection. All field officers viewed these tools as very effective.

4.2.2 Digital Tracing techniques

Along with digital surveillance, various digital tracing tools are used to detect criminals. Participants mentioned mobile phone tracking, geo fencing, and call details record (cdr) as important elements of technical investigation. They use IMEI number and mobile location data to trace devices and physical movement of suspects. CDR provide communication details and analyze call history. Geo fencing is a common tool that observes mobile activity within specific virtual created zones to corroborate investigation leads. However, Field staff also noted that accessing this information often requires going through a long administrative process which can delay investigations and limit their ability to work on time. Field officers revealed that at the station level accessing such data sometimes involves procedural steps, approvals from seniors and coordination with external organizations. Few of them suggested that tracker devices should be made available directly at the police station for quick action. Some field officers proposed a central database linked with external institutions e.g. NADRA, telecom providers etc.

4.3 AI Readiness in Law Enforcement

4.3.1 AI awareness and Understanding

Notably, the results revealed a significant gap in AI awareness among frontline officers. While some field officers had heard of AI from social media, their understanding was limited.

Majority reported having no awareness of the concept. One field level officer admitted to not knowing the term “AI” and loosely compared it to “human informant” for intelligence. A few of participants associated AI with tools like Meta AI, Chatgpt. Although they were unclear about its technicality and other uses, they describe it as technology that provides ideas, solutions and easily accessible information.

4.3.2 Potential AI Applications

All field participants stated that AI technology is currently unavailable at the police station level. Beyond fixed surveillance, few of the field officers mentioned the use of smart car to monitor the public spaces and respond quickly to incidents. Although they did not specify its capabilities, some officer level participants recognised its features such as face detection and automatic number plate recognition. These functions enable them to identify suspects, stolen property, and suspicious items in real time. This improves responsiveness which allows police personnel to conduct on the spot verification and take rapid action during patrols.

Safe city officers described several AI powered technologies currently in use for Islamabad Police and traffic management including ALPR, behaviour analysis, object identification, facial recognition, and edge technology for real time data processing. ***One SC officer reported that they use two applications. One is made by themselves “Power BI” and the other is a bought tool “extreme C”. Both help generate analytics that cover every angle about people and vehicles (OfficerSC-6)***

The system captures meta data from vehicles such as time, speed, engine status and parked vehicles while analyzing travel routes to monitor traffic congestion and assist in traffic management. ALPR integrates with intelligent traffic system that identifies 25 types of traffic violation (e.g. using phone, seat belt compliance) and flags vehicle with unpaid fines. It also identifies stolen vehicles and syncs with Pucar 15 and field officers to trigger alerts. It is also

well trained to distinguish between different vehicle types and colours, including government, diplomatic, and provincial vehicles. Metadata also collects attributes of humans like height, body, gender, colours (black, white, red), accessories (sunglasses, long hair, beard), and clothing details within specified time frames.

Face recognition (FR) technology detects criminals by matching faces against databases, achieving 85% accuracy, generates alerts and differentiate individuals based on factors like age, gender etc. Object identification helps detect suspicious activities e.g. during procession. It can recognize specific things like cars with writings/stickers, colourful shopping bags, or other potentially harmful items. Behaviour analysis monitors crowd mood during protests via cctv to identify emotions such as sadness, happiness, or anger. This uses extreme C technology to ensure public safety with all data passing through a 'canopy of suspicion' for security purposes (Officer SC-5).

- **Predictive Policing**

The concept of predictive policing is not well understood among field officers. While various crime prevention methods are described, they did not demonstrate familiarity with the AI based predictive policing. They explained that no current tool or system can definitively predict where or when a crime will occur. Instead, they apply other methods at the station level based on crime mapping, sources, experience and judgment. ***"If there's an increase in snatching incidents or the car parking area is extensive, we deploy personnel there."***. Field officers expressed optimism that if such tool is introduced, it would be very helpful for police operations because it can warn them before a crime happens and thereby helping to prevent it. One of them noted that ***doubt often arises when a decision is made by human but not when it comes from system (P9).*** However, one officer level participant demonstrated familiarity with predictive policing. He explained that, based on past data pattern and criminal behaviour, it is

possible to pinpoint where the culprit is likely to commit a crime (Officer 2). Only one officer reported the launch of hunch lab and cyber city software (Officer 4).

Safe City Officer revealed that integrate all crime related data by inputting and extracting information through an in house developed analytics solutions "Power BI". This software pinpoints when and where crime rates spike. For example, it shows that on Thursday between 2pm to 4pm a particular area sees increased incidents and system can point exact location then they deploy field units there. They combine this data driven approach with human intelligence during the model training phase which they consider essential. They stated that this strategy has yielded good results as over six months they identified more than 77 criminal gangs, many of which have been busted. In practice, officers can see that on a specific day and time, an individual on a motorcycle is likely to follow certain routes which allows them to act in advance (officerSC-6).

- **Fake call**

Participants in the study reported that there are no automated tools in place to filter hoax calls. They currently rely on manual process and contextual judgment to identify and mitigate fake emergency calls. Calls received on the 15 police emergency helpline are forwarded to the respective police station, after which field officers are dispatched to the reported location. Upon assessment at the scene, officers determine whether the call was a scam and subsequently record this information. ***"We visit the place of occurrence, investigate the call and if it is found to be false, we provide feedback to register it as bogus. Currently, there is no system to filter such hoax calls"*** **(P2).** Participants elaborated that many of these false reports arise from common situation for example children calling, prank calls, or misleading complaints. However, Safe City officers stated that a pivotal feature of the 15 call system is speech recognition which automatically detects female callers and redirects them to women police station and vice versa. It is also linked with Power BI to analyze input e.g. call type, crime

category, area, responder timing. An IVR system is used in which if the caller fails to press the certain button. it would consider hoax call (OfficerSC- 6).

- **Gun shot**

None of the participants confirmed the deployment of acoustic gunshot detection systems in their jurisdictions. Instead, they pointed to patrol activities and witness reports as primary means for detecting gun related incidents. Safe City officers also agreed that gunshot detection has not currently existed, but similar project is planned.

- **Robots**

As of now, robots have not yet been incorporated into daily operations of the ICT police. Field officer largely viewed robots as something seen in films, and their perceptions were mixed. Some officers and field level personnel suggested that robots might be useful in specific scenarios such as during raids, crowd control, traffic management, bomb disposal, administrative work or operations in areas that are difficult for them to access. However, few expressed scepticism about the feasibility of introducing robots into local policing contexts. Their perspective underscored concerns regarding potential harm, cultural appropriateness, and challenges in gaining community acceptance of robotic interventions in law enforcement. One noted that while robot might work in countries like America or Europe where people generally respect and follow laws. Another field officer remarked that if a robot were to lose control or fail to manage escalating situation, it could become dangerous. ***"Technology is advanced enough to do things, but when it comes to actually doing them, our culture, finances, and other factors would get in the way." (OfficerSC- 6)***

Other AI technologies

When asked about AI technology for lie detection, field officers reported that such tool is not available but forensic agency might use polygraph tests. All Participants and Safe City Officers

also confirmed that Islamabad police do not use AI for automated interrogations or chatbots. When questioned about social media monitoring, field participants confused it with public awareness and other campaigns run through their official website. However, one officer reported that social media accounts of suspects are sometimes reviewed during investigations. Safe city officer highlight that two software applications are utilized to monitor different social media platforms based on varying keywords. Although they are not fully operational, they are currently being used as a proof of concept.

4.3.3 Human Capital and Skills

The shift towards AI integration necessitates a careful reconsideration of talent management within the police department. There is a complete absence of AI, data science, or advanced analytical skills among field officers at Islamabad police stations. They emphasized that their current expertise is limited to using traditional crime investigation tools. While some participants mentioned the presence of computer literate staff at the police stations, these references largely pertained to front desk officer responsible for data entry and record management such as using Word, Excel, online challans, lost reports, verifications, FIRs and other similar tasks rather than advanced data analysis Additionally, a few participants indicated that specialized IT personnel may be working at the Safe City, though they had limited direct knowledge of their functions.

None of the participants nor their colleagues had received any training or courses related to AI applications in the past six months. However, they do participate in other police courses, workshops, and refresher trainings focused on standard law enforcement procedures. Encouragingly, Participants expressed a strong interest in learning AI related skills, and they acknowledged the potential value of acquiring these skills. They note that such expertise could strengthen the crime analysis and support the handling of complex cases in this digital era. As

one field participant quoted **"*These days we see crime has become technical, new ways are coming, so we also need to upgrade our skills and gadgets accordingly*" (P2).**

SC Officer stated that while staff are available at Safe City, their expertise primarily have been developed internally using existing resources (OfficerSC-6). This upskilling has proven helpful for operational success. However, the absence of specialized personnel in AI/ML was also noted by him. At the police station level (e.g investigations officers), Officer acknowledged a limited understanding of advanced technologies. Safe City officers reported taking relevant courses online to improve their technical knowledge and capabilities.

4.3.4 Data and Infrastructure

Islamabad Police maintains data records in both digital and manual formats. According to participants, various types of data are routinely documented including FIRs, criminal histories, hotel data, challans, daily diary etc. This information is stored physically as paper files as well as in online databases managed at each police station. Participants and Safe City officials confirmed that digital records have been updated daily since 2017.

In terms of IT infrastructure, participants reported that computers and basic IT systems are available at all police stations, and they have access to the necessary hardware for data entry and managing records. The existing setup was described as sufficient for maintaining current databases (PSRMS, Hotel Eye, CRO etc) and supporting routine administrative work. However, they also recognized that these systems are relatively basic with no advanced software or AI models in use at the station level. Presently, the infrastructure primarily supports data storage and retrieval rather than sophisticated data analysis. One officer suggested that CRO should have feature other than fingerprints, like iris or face detection (Officer 1)

"*We do have computers, and we maintain criminal records. Each station has a CRO (Crime Record Office) software that keeps details related to suspect data*" (P1)

While the existence of digital records reflects progress in data management, parallel manual record keeping is still required for judicial processes as many court proceedings depend on handwritten files and legally valid hardcopy documents. For instance, Interrogation case files (missal) are still written by hand and maintained in physical copy. This double workload not only increases administrative burden but also contributes to inconsistencies and delays in data usage for investigative purposes. Furthermore, field officers highlight that no formal legal frameworks exist for the admissibility of digital evidence which limits the effectiveness of current digital systems.

4.3.5 Strategic Planning and Governance

A small number of field participants acknowledged that discussions on AI occasionally occur in higher level forums, particularly within the Safe City Directorate which typically leads such initiatives. However, most frontline officers had no knowledge of any plans, governance structures, or relevant policies and regulations to guide the use of AI technologies within the Islamabad Police. Furthermore, they noted the absence of organizational dialogue or future oriented planning on this matter at the police station level. Moreover, when asked about AI development budgets, field officers generally expressed limited awareness of any dedicated funding for AI related projects. At the police station level, they highlighted that no specific budgetary provisions exist for such initiatives. Instead, funding decisions appear centralized under the authority of higher management rather than individual stations. Safe City officers stated that AI enabled cameras have been purchased and few projects are in pipeline. However, one officer noted, ***"We face budget limitations (…) the finances required to keep ourselves equipped with new invention are not readily available (OfficerSC-6)"***

4.3.6 Risks and Ethical Consideration

"It can be useful if used in the right way, but it can also be manipulated. (....) gun in the hands of the police means protection, but a gun in the wrong hands has a negative impact."

(P10) The integration of artificial intelligence in policing raises important ethical concerns. None of the participants could cite existing policies or guidelines on AI ethics, citizens privacy, bias mitigation, or accountability for algorithmic decisions in policing. However, field officers said that new technology always brings both positive and negative aspects where real impacts of such technologies become clear only after practical implementation. Some of the field level and officer level participants raised concerns about security of confidential data of police and notes the possibility that the application of AI technologies might lead to data leakage or viruses into police system. Regardless of AI context, field officers noted that human error is possible. However, if an individual is found innocent, they are not arrested and released by law.

Safe city officcers emphasised the need for clear policy frameworks at both department and government levels to guide the ethical use of AI. One SC officer stressed that the absence of national level guidelines is concerning given the sensitivity of data involved. In his view ***"there must be a clear policy on what type of model and data should be used for training and should be avoided" (officer SC-6)***

4.3.7 Future Policing

Participants demonstrated a clear willingness to embrace artificial intelligence in future policing. Many shared positive attitudes and advocated for AI integration into law enforcement bodies, especially within the capital police, which they believed could set a precedent for other cities like Karachi, Lahore Rawalpindi, Faisalabad. ***One field officer stated that if such technologies are being used in other countries, then Pakistan should also adopt them in police force for the welfare of society (P3).*** Field participants emphasized that such technology should also be extended to the police station level to improve their tasks. Participants suggested that AI would be particularly valuable in urban areas with higher crime rates. They stated that if AI proves helpful, then it should also be applied to traffic management, accident prevention, early detection of kidnapping gangs (dealings), case resolution, and crime investigation. ***One***

officer quoted, "Yes, we can also adopt AI. It will help ICTP in crime control, reduce waste of resources, and make patrolling deployment better." (officer 3) Another field officer expressed that educated individuals can understand the potential of AI (....) misconceptions and negative propaganda about such technologies can circulate among the general public (P4)

4.4 Perspectives from other Stakeholders:

Seven key informant interviews were conducted with representatives from Ministry of Interior, Ministry of IT and Telecom, National Police Bureau, FAST-NUCES and National Centre of Artificial Intelligence (NCAI). They provided macro level insights into policy, institutional and technical side of AI adoption in LEAs of Pakistan. Their reflections helped illuminate the prospects and limitations surrounding AI integration in policing particularly within Islamabad Police.

4.4.1 AI awareness among stakeholders:

Most of the stakeholders demonstrated a relevant understanding of predictive policing as an approach that utilizes the past criminal records to anticipate future crime occurrence. They acknowledged that this concept holds a potential for improving crime prevention in a society. Some stakeholders had general exposure to AI related work through their professional or academic backgrounds which shaped their perspective on its applicability in policing.

4.4.2 AI landscape:

- **Policy**

Stakeholders confirmed that no formal national/provincial policies, regulations or legal frameworks currently exists to support AI policing adoption in Pakistan. Some of them pointed to lack of political will, public demand and inter agency interest as a key reason why AI in policing has not been prioritized on the policy agenda. AI policing has yet to gain attention

from policymakers. Discussions are confined to specific reforms and no specific budget allocations have been directed toward AI implementation for police sector. One noted that the 18th Amendment which grants provinces autonomy over certain sectors presents a challenge to building a unified national narrative. Ministry level respondent highlights that national AI policy is currently in draft form and under development. It aims to provide strategic direction for future of AI in Pakistan by proposing an inclusive framework that addresses key dimensions of AI, outlines development objectives and ensures safe and secure deployment. While the policy does not specifically address law enforcement, pillar 4 of the policy recommends the use of AI across various sectors. It is ultimately up to individual ministries and authorities to develop sector specific systems using this policy as a foundational guide. Respondent observed that developments in AI are progressing rapidly around the world and countries launching new initiatives almost every other hour. Therefore, Pakistan must also respond swiftly and stay aware of these global trends.

- **National Initiatives:**

Stakeholder from government AI center and relevant ministry mentioned that Pakistan has laid essential groundwork for integrating AI into governance through initiatives like "Presidential Initiative for AI and Computing, the Digital Pakistan vision, and national bodies such as the AI Task Force, AI tech centre and national centre of excellence (NCAI). Engagements with the Punjab Safe City Authorities are also in progress to explore pilot initiative implementations. A representative from national policing institution also noted that preliminary efforts are underway. According to this perspective, general discussions around AI adoption in LEAs have started at the national level, and steps are being taken to develop relevant databases that could eventually support AI based policing.

- **ICT status:**

Majority stakeholders acknowledged that AI is already being used in Safe City with limited capacities. For example, they cited automated FIR, facial and number plate detection technology deployed in Safe City as an early AI application in policing. Ministry level respondent mentioned that crime analytics project is being carried out with police departments using data analysis tools. Although these are not AI systems, such initiatives will be essential for developing future AI solutions.

Stakeholders also noted that overall pace of adopting AI technologies in law enforcement is relatively low in Pakistan. *"The proper use of AI is still new in Pakistan; it hasn't been around for long. We've only recently started using AI.....It is in the initial stage… and not yet mature"* (Senior officer from national policing institution)

4.4.3 AI Prospects:

Stakeholders perceived that ICTP may face institutional, technical and financial constraints to integrate AI solutions into their operations at present. They particularly highlighted critical shortage of skilled personnel as well as technological and infrastructural gaps that hinder the implementation and maintenance of AI technologies within Islamabad police department. One respondent quoted, "(.....) *there is a lack of AI literacy among their leadership, limited technical staff, and absence of innovation roles."* (Officer from government AI center)

Respondent from a national policing institution emphasized that predictive policing could play an important role in optimizing patrolling efforts and human resource allocation. New technologies can provide cost effective solutions, improve operational speed, and reduce search time. AI enables better evidence based analysis that can strengthen police effectiveness.

Stakeholders from academia and government AI centre highlighted that models using computer vision, natural language processing, predictive analytics and speech recognition could assist law enforcement operations. Officer from government AI centre outlined four key operational

areas and a phase approach (pilot, evaluate, regulate, and scale) through which AI can significantly support ICT Police: predictive policing, surveillance, digital evidence management to streamline better workflows, and automation of administrative processes to improve efficiency.

While AI integration in Pakistan police force is feasible, financial constraints, legal requirements and other capacity building challenges continue to impede the meaningful progress in this domain.

4.4. 4 Challenges:

Officer from government AI centre highlighted challenges in data governance, interoperability, and the lack of secure digital environments. Similar concerns were echoed by a ministry level respondent who also reported the lack of a formal data governance policy or framework. The non availability of quality datasets to train AI models was a recurring issue. Both ministry level and academic respondents emphasized that AI model development requires access to real time structured datasets which are currently unavailable. Limited data sharing access and poor inter departmental coordination was also identified by senior officer from national policing institution. Although various departments such as NADRA, HEC, BISP, hospitals etc maintain their own datasets and legal restrictions often prevent data sharing across institutions. There is confusion regarding who can share data, with whom and under what conditions. For instance, unlike integrated systems in countries with social security networks, sectors in Pakistan operate in silos which makes it difficult for cross sector collaboration.

"We already have the data; what we need is integration at the national level to create a large databank. Then, policies must define who can use it, make authorization more stringent, and ensure accountability (....) *If data sharing takes place, securing that data becomes essential because data is power."*

4.4.5 Ethical Consideration:

All Stakeholders stressed the importance of ethical safeguards in any future AI policy or technological development. A ministry level officers expressed concern over potential breaches of personal privacy and misuse of citizens data. Pakistan currently lacks data privacy guidelines specifically tailored to AI use in policing. Stakeholders emphasized the need for strict data protection and sharing policies akin to those in more developed countries to prevent frequent scams.

One stakeholder challenged the ethical and operational basis of predictive policing by raising a fundamental question: "*If the law only recognizes an act as criminal after its commission, how can individuals be predicted or profiled to commit offenses that by legal definition does not yet exist?"* (Senior officer from national policing institution)

Respondent from government AI centre had concerns about AI biasness by stating that it can lead to over policing, distorted risk assessment and resource allocation. To address this, recommendations include predeployment impact assessments, regular bias audits, human supervision and transparency in training models all in line with constitutional rights, personal data protection bill, and oversight by independent ethics review board. Ministry level respondent referred to the draft AI national policy which focuses on building progressive and trusted environment for AI adoption. Respondent explained that the policy addresses the safe use of personal data and responsibilities for platforms providing AI services. In addition, the Pakistan Data Protection Bill will introduce legal obligations for all technologies that process end user data to ensure safety and trust.

4.4.6 Recommendations:

Stakeholders also proposed solutions to enable gradual AI integration and promote responsible AI practices in Law enforcement. They suggested that AI adoption should begin with

institutional readiness such as upgrading infrastructure, sufficient funds, governance frameworks, policies, specialized AI training and conducting awareness programs on AI for senior management and field personnel before deployment. Investment in recruiting well educated officers with new roles like "*AI ethics officers, data scientists*" and fostering a culture of digital literacy within the police force is also considered essential. Respondent from government AI centre stated gaps are being addressed through *AI strategy units, certification tracks, national AI infrastructure fund, establishment of embedded AI innovation labs within police departments, secondment and exchange programs.* A National Police AI Oversight Board and joint council on AI was also suggested involving MOITT, Interior Ministry, NADRA, and police for inter agency collaboration.

Stakeholders emphasized the need for cohesive national approach to AI integration by strengthening provincial capabilities. They stressed the urgency of developing federal level AI policies to standardize practices and uniform implementation across all provinces. Representative from national policing institution suggested that provinces must be empowered first in terms of data collection start form police station and technological infrastructure so AI can be effectively integrated at the national level. While Punjab and Islamabad have made some progress, regions like Gilgit and AJK still need support to ensure nation wide inclusion. *"As each province faces distinct operational, traditional, and cultural challenges, it was suggested that they are best positioned to identify their internal limitations and formulate context specific AI strategies that align with broader national objectives."* (Senior officer from national policing institution).

Ministry level officers underscored the need for **documentation of all individuals**, including undocumented populations to enhance security measures. They identified transnational crimes and the exploitation of digital platforms by criminal networks as critical threats. They argued

that the AI is not merely advantageous but necessary to modernize overall law enforcement agencies and safeguard internal security in a rapidly changing environment.

In addition to technical preparedness, Stakeholders also demanded for the **legal reforms** to support the of AI in the criminal justice system. *"We need legal reforms related to AI. For example, digital FIRs were initially not admissible in court, but after amendments, they are now accepted. Similarly, legal reforms are necessary to ensure that results produced through AI can also be admissible in legal proceedings"*. Officer from government AI centre proposed that it can be resolved through *an "AI in Law Enforcement Act"*.

While majority of them generally expressed optimism about **public receptiveness** to AI, some offered a cautious view. They emphasized that public must be properly educated about the purpose and limitations of AI policing prior to its implementation. Without awareness campaigns, misinformation or distrust could hinder public acceptance.

CHAPTER 5

DISCUSSION

The results reveal that Islamabad Police is in transitional phase where traditional policing methods coexist alongside emerging technological capabilities with significant gaps persist in readiness for artificial intelligence. This section discusses the findings in relation to the research questions and objectives of the study.

5.1 Current Policing Practices

The core policing functions of Islamabad Police involve crime prevention, investigation and detection. The findings reveal that the policing methods of Islamabad Police follow a hybrid approach that combines reactive strategies with modern data driven techniques. This operational model draws on policing theories including community oriented policing and intelligence led policing. The application of intelligence led policing is evident in ICTP practices such as crime mapping and data analysis which help identify crime patterns, trends and crime zones. These insights support hotspot policing and enable proactive interventions by targeted deployment of resources. Hotspot policing is operationalized through heatmaps and focused patrolling including smart cars, dolphin/eagle squads and plainclothes officers. These units concentrate on disrupting crime in high risk areas. Their deployment is guided by crime maps that inform the locations and timing of criminal activities based on reported incidents (e.g. property crimes). Safe City plays a key role in generating this data through crime reports and surveillance tools.

In addition to the crime analysis, the consistent reference to Safe City CCTVs and the reliance on human informants highlights their integral role within Islamabad Policing. These practices suggest that the force is incorporating both technology and human intelligence into its operational model. This reflects a shift toward more data informed and tech driven approaches

to law enforcement. Islamabad Police also monitored repeat offenders and conduct crackdowns on criminal gangs and networks which aligns with both hotspot and intelligence led policing. These methods are intended to divert recurring crime patterns through more strategic actions. Participants perceived them as effective in contributing to crime prevention efforts.

Community engagement also plays a significant role in ICT policing. Beat patrolling and public interaction promote police visibility in society which is central to the principle of community policing (Dye, 2021). This model emphasizes trust building and the integration of local knowledge into policing practices. Community linkages are actively used to supplement surveillance which underscores the participatory dimension of ICTP. Public awareness efforts through campaigns, seminars, summer camps, volunteer programs are conducted to educate citizens and encourage cooperation with Islamabad Police. These initiatives are increasingly delivered through social media platforms to reach a wider audience, share timely updates such as arrests/recovery and promote community safety (Aqeel & Rashid, 2024). This method strengthens the partnership between the police and the public to boost security and builds public confidence in police department.

Despite the adoption of modern techniques in Islamabad Police, conventional policing and human intelligence continue to dominate operational practices. For example, the police often act upon the analysis of the 15 emergency calls or crime reports which determines the hotspots and subsequently deploy resources. This shows the use of crime analytics, but it predominantly constitutes a responsive framework rather than an anticipatory crime prevention system. From the lens of investigation, it also becomes evident that police response is primarily triggered after the occurrence of crime which marks post incident action. This approach signals a persistent orientation toward reactive prevention despite the availability of tools that could enable a more advance system to predict and prevent crime before it occurs.

The investigation process within the Islamabad Police typically begins with the response of a patrolling officer or the designated dispatcher (smart car/dolphin/eagle squad) to the 15 emergency. Upon reaching the crime scene, the area is examined and an FIR is lodged accordingly. Following this, cases proceed to forensic units where evidence material including firearms, fingerprints, and DNA samples is collected and submitted for analysis to the external agencies like National forensic agency or Punjab forensics science agency (Mohsin, 2024). However, delays in evidence processing can occur due to limited forensic resources at the police station. The introduction of portable forensic kits at station could support initial assessments.

Islamabad Police investigations use both traditional and digital method. It includes witness interviews, suspect interrogations and information gathered from human informants. Investigators also consult digital criminal records and utilize technical tools such as CCTV recordings, geo fencing, mobile location, call detail records (CDR), and vehicle registration tracking (Mohsin, 2024). These tools have become indispensable for police department in reconstructing timelines, establishing suspect movements and corroborating evidence. But their use often faces hindrance by procedural steps and the requirement to get approvals from external agencies. Legal restrictions and inter organizational dependencies were cited as major bottlenecks in accessing critical information in a timely manner. A recent case before the Islamabad High Court exemplifies this challenge where the court initially suspended telecom companies from sharing live locations, CDR and other information with LEAs (Asad, 2024). This affected the progress of ongoing investigations. Later, the court acknowledged its usefulness and temporarily allowed data sharing for post investigations until the next hearing. However, the court stressed that surveillance without authorization from high court judge under Fair Trial Act is unlawful. Because it violates constitutionally protected rights of citizens such

as liberty, dignity, fair trial. Policy reforms must balance investigative needs with strong measures to prevent misuse and provide clear legal guidelines.

5.2 AI readiness of Islamabad Police

The Safe City Islamabad Project functions as the centralized technological hub for ICT Police which covers a wide spectrum of operations from crime response to surveillance and the gradual integration of advanced technologies such as artificial intelligence (AI). A crime response system which is initiated through emergency calls made to the Pucar-15 hotline. These calls are received at the central command centre where they are assessed and dispatched to the nearest mobile police e.g smart cars, Eagle, or Dolphin squads. The response time is ideally within five minutes in urban areas, though it may increase in rural zones. Several participants regarded this system as effective for immediate law enforcement deployment. However, a critical analysis reveals that the system remains largely focused on police related emergencies with limited integration across other services like fire brigade, hospitals. While some basic data analytics are used, the system lacks automated capabilities that facilitates real-time coordination among multiple agencies. More sophisticated models could include automatic location tracking, situational analysis, and interoperability with mobile applications and social media platforms. Additionally, features like video calling could enhance the responsiveness of system in complex or high risk scenarios.

5.2.1 Technological foundations and critical gaps

Safe City includes limited AI driven tools in crime response system e.g. speech recognition feature that identifies gender of caller and an interactive voice response (IVR) system with menus and voice commands to understands what the caller wants and routes the call. Notably, if a female caller is detected through voice analysis, the system redirects the call to the women police station. However, the level of automation is minimal here. For example, the

identification of hoax or non serious calls is still largely manual with officers verifying calls only after visiting the scene. The IVR system relies on fixed responses and lacks adaptive learning or decision making capabilities. If a caller does not engage with the IVR menu by being silent or hanging up, the system may register the call as non credible without any intelligent mechanism to assess urgency or distress. To enhance its effectiveness, the system could integrate natural language processing (NLP) and advanced speech recognition to interpret caller intent, detect emotional cues, fake call, mitigate language barrier and classify calls based on urgency. Such upgrades would transform it from a reactive to a context aware system which supports effective and coordinated emergency responses. A pilot project named "Saving life 911" under the Mexican National Institute of Statistics and Geography and United Nations Office of Drugs and Crime (UNODC) unlocked the power of AI using NLP to analyze 911 call transcripts and accurately classify incident categories (UNODC Mexico City, 2024). It was able to uncover hidden cases of gender based violence that were initially mislabelled as medical emergencies, fires, or accidents. Even if a call reported a different reason, the AI could detect signs of intimate partner violence in the background and reclassify the case under the gender based violence category.

A central feature of the Safe City system is its extensive CCTV camera network which plays a vital role in mass surveillance, criminal investigations, and managing traffic flows. These cameras installed both by Safe City and public individuals that are widely considered effective in tracing suspects and supporting evidence collection. For increased functionality, the system has partially incorporated advanced technologies driven by artificial intelligence. AI applications within this system include ALPR, behavioral analysis, face and object detection. It can detect and match vehicle number plates against database to identify traffic violations, unpaid fines and stolen vehicle. FR technology facilitates the identification of suspects by comparing captured images with existing data. Object detection features can flag predefined

suspicious items in the system and instantly trigger alerts. CCTV network collects and process metadata such as vehicle speed, parking status and time stamps to improve surveillance efficiency from multiple dimensions. In certain cases, AI tools help analyze human characteristics including gender, age, clothing, and presence of facial hair (e.g. beard, glasses etc). This information used in suspect profiling and movement tracking. Interview data also referenced the deployment of smart cars with both ALPR and FR capability. Stolen vehicles have also been recovered because of this integrated system. All these AI driven solutions contribute directly to investigations by allowing authorities to arrest suspects, recognize their vehicles, trace routes, and verify appearances.

In addition to this, Safe City is also equipped with body worn and drone cameras. BWC are typically used by field level officers during performing duties on the ground. Drone cams are deployed during special events such as Muharram, Eid gatherings, or law and order incidents to cover the wide area.

Participants generally viewed these tools as beneficial. However, both the literature and interviews revealed limited AI integration with only 700 AI-enabled cameras currently active in Islamabad. Advanced devices such as PTZ cameras, ALPR units, and bullet cameras are operational in some locations, but questions were raised regarding the overall quality and effectiveness of the remaining cameras. This indicates significant gaps in infrastructure required for a fully AI-integrated surveillance system.

The integration of artificial intelligence into body worn cameras and drone systems represents a critical opportunity for ICTP to strengthen operational efficiency and situational awareness in modern policing (Davies & Krame, 2023). For instance, high resolution cameras with AI can be trained to identify concealed threats in field work while AI driven drones could issue live automated alerts to individuals displaying suspicious behaviour or items in crowds or restricted zone. Moreover, advanced feature such as age progression or masked face

recognition could improve the ability to find fugitives across disguises or after long period (Wang et al., 2023). As seen in China, FR technology used and apprehend a suspect during a crowded concert of thousands people (BBC News, 2018). Integration with social media analytics is another promising avenue. Like in Pakistan, social media content often shows images or videos displaying firearms or act of violence could be monitored using AI for swift responses to emerging risks in both physical and digital spaces. Although these suggestions are aspirational in the Pakistani context, they signal the global direction of AI in policing and underscore the need for forward looking investments in intelligent surveillance infrastructure.

Safe City Islamabad is using certain AI technologies for surveillance and investigation. The question then arises whether they are doing AI assisted crime prediction. Islamabad Police presents their analytics system which is comprised of Hunch lab, Cyber City and customized software called Power BI. A close examination of its operational mechanics reveals that it falls short of true predictive policing. It was observed that they have not built their own analytics engine but have instead configured Power BI in house to create visuals dashboards, data pipelines, and custom reports. Using this setup, analysts review historical crime data to identify repeating patterns and busted criminal gangs. For example, “an individual on a motorcycle travels route Y every day at 9 AM.” On the other hand, true predictive policing involves statistical or machine learning models to compute risk scores for every location and time and forecasts new hotspots for proactive patrols (Meijer & Wessels, 2019). In practice, Islamabad Police system is limited to an if-then approach based on observed patterns rather than assigning probabilistic forecasts (e.g. 60 percent chance of a burglary in sector z tomorrow). None of the participants mentioned specific AI models or algorithms. However, it can be inferred based on the applications they described that most of the technologies in use are likely computer vision and machine learning.

The evidence found that AI or technical systems are not implemented at the police station level and most field officers are largely unaware of their existence. Technologies like gunshot detection, robotics, chatbots, polygraphy, and automated interrogation tools powered by AI are currently absent from routine police operations. Stakeholders also emphasized that AI is being used in a limited capacity with ICTP and the adoption of AI technologies in law enforcement is low at the moment.

Resources within ICT Police is characterized by rapid response facilitated by a centralized data-driven surveillance framework. However, the decentralized decision making for day-to-day policing at the station level sometimes suffers from inadequate staffing, resource shortages, and funding constraints. The noted issues of insufficient workforce, administrative burden, and transportation highlight systemic limitations that could severely undermine operational effectiveness (Salman et al., 2023). Response times and resource allocation effectiveness significantly differ based on geographical location. This points to leverage the AI powered tools to optimize resource allocation, automate administrative tasks, and enhance responsiveness (Benkirane & Benazzi, 2024). Stakeholders also suggested that AI could be effectively used for predictive policing, surveillance, automated work and evidence management.

Following are the key gaps identified from the results which indicate areas where artificial intelligence can potentially improve policing outcomes in Islamabad:

- **Public engagement:** Absence of AI-powered *chatbots* for citizen interaction, reporting, providing crime prevention tips and complaint guidance.
- **Forensics :** AI in forensic analysis to support faster and automated evidence processing.
- **Fragmented data systems:** An AI enabled centralized platform could streamline investigations and reduce delays caused by fragmented information systems

- **Investigation support:** Investigation techniques vary across crime types and contexts. AI driven assistants could support officers by offering case specific insights, relevant procedures, and managing timelines.
- **Manual documentation:** automated AI transcription for recording and processing witness interviews or interrogations (Dubravova et al., 2024).
- **Weapon detection:** firearm or gunshot detection model
- **Robotics in policing:** mini robots for police operations, bomb disposal, administrative work, patrolling
- **Crime classification:** Currently, crimes are categorized by type and severity. AI systems could automate classification, prioritize based on public safety risk, and allocate cases to specialized personnel accordingly.
- **Resource deployment:** AI can optimize administrative operations and dynamic deployment of field units using real time crime trends, traffic data, or emergency needs (Europol, 2023)

5.2.2 Human Capital

Another critical factor of AI readiness in Islamabad Police is the evident AI knowledge and skills gap among personnel. Some are familiar with general tools like Chatgpt, others admitted to not knowing the term "AI" at all. Although many officers demonstrate strong field expertise, current police trainings do not include AI related courses or workshops that could improve operational effectiveness at the station level. Whereas front desk officers are present for administrative tasks, there is noticeable absence of AI specialists within Islamabad Police. This absence of technical skills and AI literacy was also noted by stakeholders. It can limit the ability of ICTP to implement and sustain advanced AI driven solutions. However, participants did express enthusiasm and openness to learning. The shortage of AI trained staff and structured

training programs exacerbate these readiness challenges. Moreover, it is not necessary for all police personnel to become AI experts but a basic understanding of artificial intelligence is increasingly essential across all levels of law enforcement. If they are unable to understand how AI systems function, it may raise ethical concerns particularly in situations where they rely on algorithmic outputs without questioning their accuracy or fairness (Meijer & Wessels, 2019). The level of AI knowledge required should be aligned with the nature of the job role. This also calls for reform in recruitment practices to bring in candidates with strong IT skills and knowledge of technology (Salman et al., 2023). Additionally, partnering with EdTech companies can assist the delivery of flexible and AI focused training programs tailored to the unique operational needs of law enforcement.

5.2.3 Data ecosystem

Data infrastructure is a fundamental requirement for any organization aiming to integrate AI solutions into their operations. The findings highlight that Islamabad Police has made progress in digitizing its data management since 2017. Police stations maintain both manual and digital records including FIRs, criminal or hotel related data, daily logs etc. There is functional computer systems and software in stations which adequately support administrative tasks such as PSRMS, Hotel Eye, and CRO (Salman et al., 2023). However, the system is not integrated with advanced analytical tools or AI models. Additionally, databases operate in silos which need to be unified for ease of access. It was noted that the criminal record office system could include facial or iris features. Stakeholders also highlighted the lack of quality, real-time structured datasets as a key barrier to AI model development. This dual system creates discrepancies and fragmented data trails which not only reduce operational efficiency but also risk introducing bias into any AI models developed on such uneven datasets. Models trained on incomplete, inconsistent, or outdated data are more likely to produce skewed outputs.

The continued reliance on manual records alongside digital systems also highlights challenges related to the efficiency and data consistency. Police officers in Islamabad continue to maintain manual records as courts still require handwritten notes and legal documents (Salman et al., 2023). Investigation officers prepare case reports by hand. In 2024, the Government of Punjab introduced amendments to Police Rules and directing the use of digital record keeping for documents such as daily diaries, investigation statements and FIRs (Adil, 2024). Investigation officers are now permitted to write manually or digitally with the digital version included in the case diary. However, there is no mention of a digital case management system where all such data can be securely stored and accessed by authorized personnel.

For Islamabad Police, the absence of such infrastructure limits transparency and standardization, creates biases and obstructing the foundation needed for responsible AI integration.

5.2.4 Strategy and Governance

Observation and findings indicate that overall AI technologies and knowledge are primarily concentrated within the Safe City system with little to no presence at the police station level. There is a demand for these capabilities to be made available at the station level as well, such as establishing mini safe city units or control rooms across two to four jurisdictions. While these functions fall under coordination mechanisms, a disconnect has been evident between higher authorities and field level staff. Most field officers had no awareness of AI policies, governance mechanisms, or development plans. No dedicated budget exists at police stations for AI initiatives. Despite the procurement of AI enabled cameras and ongoing projects, Safe City also faces financial constraints. This central local divide coupled with limited funding underscores the importance of inclusive planning, budget decentralization, and localized capacity building if AI is to be meaningfully integrated into everyday policing. Stakeholder's perspectives also indicate that Islamabad Police may face challenges such as technical skill

shortage, legal gaps, budget constraints. Notably, pilot initiatives led by the Punjab Safe City Authority (PSCA) and the Punjab Information Technology Board (PITB) and discussions around AI implementation are emerging. However, such efforts are still in early stages and have yet to translate into countrywide reforms.

5.2.5 Ethical Risks:

The intersection of AI, law and ethics presents a delicate balance. AI can be used for positive purposes but also carries the risk of legal or ethical violations depending on how it is perceived or applied. In the case of Islamabad Police, a critical concern is that certain AI tools are being implemented without any formal AI policy, legal framework or ethical guidelines in place.

Predictive policing raises complex ethical and legal concerns when it targets behaviours that are not yet legally defined as crimes. This approach challenges the foundational legal principle that individuals can only be held accountable for acts that are criminalized by law at the time of their commission. Critics argue that it is logically inconsistent to predict or profile individuals for offenses that do not yet exist within the legal framework. Predicting potential offenders without legal basis invites scrutiny over issues such as accountability, transparency, algorithmic bias, legal validity and misuse of predictive models. AI in law enforcement also cause excessive policing, inaccurate evaluation of threat levels and resource allocation. AI systems cannot simply be installed and left unattended. Their deployment is not a one time event but a continuous process that demands ongoing monitoring and evaluation. Therefore, regular bias audits are essential especially during the training dataset phase to detect and mitigate systemic biases in the models (Ijiga et al., 2024). Since these technologies are still in their early stages of implementation, Human-in-the-loop mechanisms are necessary for the decisions to be aligned with legal standards and ethical expectations.

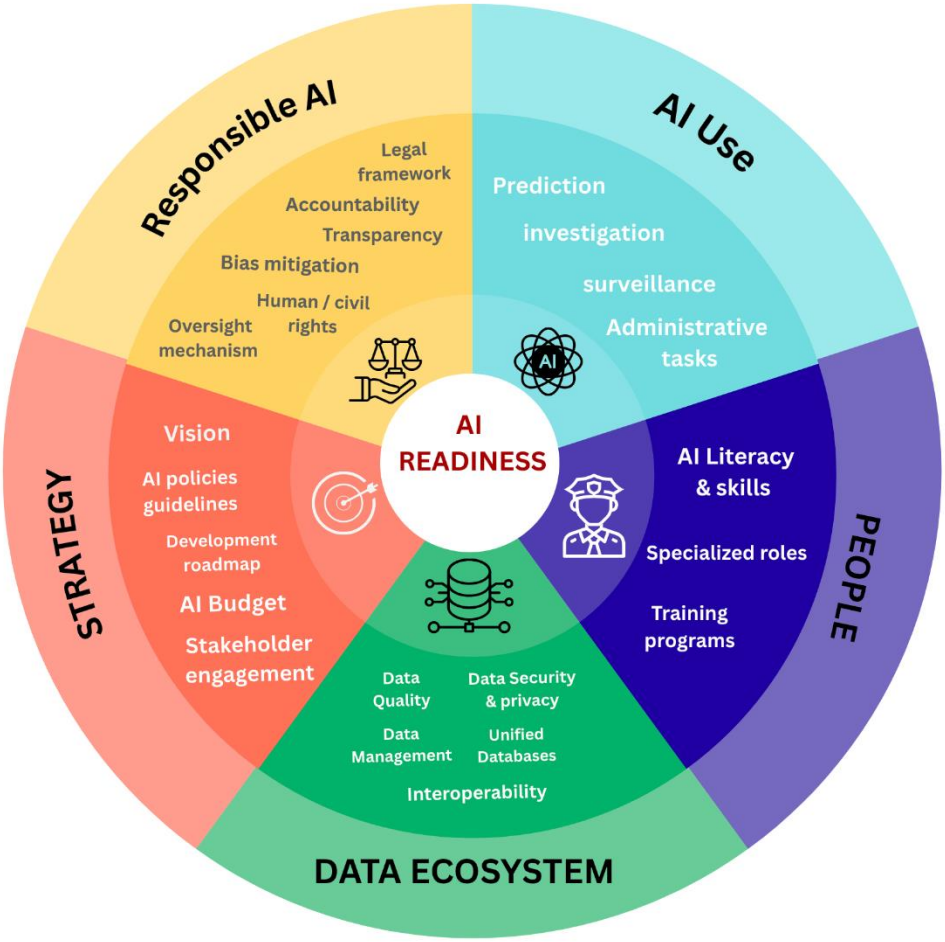
Given the ongoing adoption of various digital tools and the likelihood of new technologies being introduced, clear protocols on data sovereignty and digital sovereignty are equally necessary for ethical and secure implementation. There was a consensus among stakeholders that the lack of data governance and data privacy rights is a major barrier to the adoption of AI in policing in Pakistan. As seen earlier in the example of court, stakeholders also pointed to data sharing, interoperability of systems, and interdepartmental coordination as another challenge for AI implementation. Institutions like NADRA, BISP, HEC, and hospitals hold valuable separate datasets. Legal constraints and unclear regulations prevent effective collaboration across sectors.

Based on the findings, stakeholders highlighted political will, public demand, and cooperation between agencies are key factors in deciding whether AI in law enforcement becomes a policy priority. One stakeholder pointed out that provinces have autonomy over their systems as seen in the example of Punjab which has taken independent steps toward digital policing. However, there is currently no dedicated AI policy for the law enforcement sector at the national level. Stakeholders including police personnel and institutional actors expressed mixed views regarding data security, privacy issues, and public trust. Cultural perceptions and the level of community acceptance all play a role in shaping how AI is received. For responsible AI, both internal protocols and national level guidelines are essential. A national AI strategy for policing should be adaptable to local realities, recognizing that each region has its own specific challenges and opportunities. This means understanding the unique crime patterns, resource availability, and operational capacity of different areas before deploying AI tools. This approach can help avoid deepening institutional or regional divides in AI adoption. Moreover, public awareness campaigns should be conducted prior to deployment to build trust, clarify misconceptions, and encourage community support. This is especially relevant in Pakistan where public opinion varies widely and trust in institutions is often fragile. Past examples such

as hesitancy toward polio or COVID-19 vaccines highlight how misinformation and lack of transparency can lead to public fear and rejection. Similarly, if AI tools in policing are introduced without proper explanation, they may be viewed with suspicion. Therefore, early and inclusive engagement is crucial for fostering mutual understanding between law enforcement and the public.

Overall, Police personnel believe that as the capital city force, Islamabad Police should be equipped with advanced technologies. They expressed the view that if AI tools are genuinely effective, they should be used to reduce crime rates, improve traffic management, dismantle gang networks, and support investigations

Figure 1 AI readiness framework. Source: author's contribution.



5.3 Policies Relevance:

In July 2025, the Federal cabinet approved *the National Artificial Intelligence Policy*[1], presented by the Ministry of Information Technology and Telecommunication (2023) as Pakistan's first national framework on AI. The rationale behind the national AI policy is rooted in promoting economic growth, improving human capital, supporting research and development, and addressing ethical concerns. The policy is organized around four developmental pillars: AI awareness and readiness, AI market enablement, building a trusted environment, and sectoral transformation. Notably, these pillars are designed to collectively address four major gaps such as lack of awareness, data inaccessibility, inadequate infrastructure, and ethical vulnerabilities.

Although the policy does not target the law enforcement sector, several provisions hold indirect relevance from a LEAs perspective. For instance, the emphasis on public sector upskilling includes AI awareness and training for government employees, covering both the existing and new workforce. This opens a potential entry point for AI skill development within police institutions. Moreover, the policy proposes the establishment of Centres of Excellence (CoEs) focused on specific sectors or industries. This offers an opportunity for law enforcement agencies and allied departments to collaborate in developing AI driven public safety solutions. The policy supports AI initiatives addressing civic and social challenges which can encompass crime prevention and security.

The policy also envisions transforming public sector operations through AI. A key focus is the establishment of national and provincial data repositories to enable access to diverse datasets for the development of AI applications in both public and private sectors. While the policy does not single out law enforcement, such data infrastructure could significantly benefit police

[1] Analysis in this study is based on the Draft National Artificial Intelligence Policy (2023), which was the version available at the time of data collection. A final version has since been approved.

departments. The Centres of Excellence (CoEs), tasked with data standardization responsibilities, are also expected to support public safety initiatives. Notably, the policy references the use of computer vision technologies to enhance safety even in smaller cities. Also encouraging automation of public services to reduce administrative burden, this indirectly reflects the digital transformation of police operations.

Importantly, ethical considerations also feature prominently in the document which includes the creation of an AI Directorate to regulate responsible AI use, an essential element for guiding law enforcement applications. While the policy does not serve as a law enforcement strategy, it offers a foundational direction that relevant ministry and policing institutions can interpret and adapt for responsible AI integration.

Digital Nation Pakistan Act (2025) sets out an ambitious vision to transform Pakistan into a digital nation with digital governance, economy, and society (Ministry of Law and Justice, 2025). At the heart of the Act lies the National Digital Masterplan, which provides the strategic framework for digital transformation. It will develop sectoral plans, guidelines, and operational rules that public institutions must align with. By implication, law enforcement agencies are also expected to bring their operations in line with this digital agenda.

The governance structure established under this Act is led by the National Digital Commission that approves the Masterplan and provides guidance to the Pakistan Digital Authority. The Pakistan digital authority holds a wide-ranging mandate, covering planning, regulation, coordination, performance evaluation of digital initiatives, improving service delivery, and encouraging innovation.

However, the responsibilities assigned to the Pakistan Digital Authority regarding data governance and raise serious concerns of institutional overlap. National Commission for Personal Data Protection mentioned in the above AI policy also mandates to oversee data

related matters. Both entities claim control over data governance. This dual structure may result in regulatory friction, fragmented enforcement, or conflicting priorities. Such ambiguity in roles and unclear coordination mechanisms between these two bodies can hinder effective implementation.

While the Act presents a promising foundation for national digital transformation, it does not provide direct guidance for artificial intelligence development. Nonetheless, steps toward digitalization proposed under the Act are essential enablers of AI applications, including in policing. To avoid duplication, it is crucial to establish a complementary model where digital transformation supports AI implementation.

From ethical lens, the constitution of Pakistan guarantees the right to privacy. To support this, *Pakistan Electronic Crimes Act, 2016* was enacted to prevent crimes in the digital world (Ministry of Information Technology and Telecommunication, 2016). This law addresses cybercrimes and add offences and penalties specifically designed to safeguard citizens against digital threats. Following this, *Personal Data protection bill 2023 (PDPA*) by MoITT goes further by specifically addressing the processing, usage, and protection of personal data across various contexts.

Personal data is required at many places and organizations for different purposes. This bill explores how data should be processed from all angles: to what extent it can be used, under whose authority, and with what security measures. This is a crucial aspect to consider before developing AI applications as AI systems are built upon data. Under this framework, there is a provision on data integrity which can support the development of AI models. The Act also places restrictions on the processing of sensitive data which is not allowed unless specific conditions are met such as obtaining consent. However, in some cases, these protections do not apply when they conflict with other laws. The Act also provides individuals with the right to access, correct, and erase their personal data with certain regulations.

Although AI is not explicitly mentioned in the PDPA, the National AI Policy references it in the context of data governance, suggesting that this supports responsible data use. Law enforcement agencies, in their own domain, can draw relevant policy rules or guidelines from such frameworks.

CHAPTER 6

CONCLUSION AND POLICY RECOMMENDATIONS

This study provided a detailed overview of how AI technologies are seen, valued and in which state of being incorporated into the operations of Islamabad (ICT) Police. It examined the existing policing methods, assessed the scope of AI adoption, and identified both opportunities for innovation and the associated risks. The purpose of this research was to understand the organizational AI readiness of Islamabad Police for this technological shift and to highlight the limitations that must be addressed for public safety and institutional integrity. This chapter presents the conclusion of the study along with relevant policy recommendations.

AI technologies into the law enforcement represents a significant step forward with the potential to transform crime prevention and surveillance. AI systems bring capabilities in pattern recognition, real time analysis and decision-making. As advancements in AI models accelerate, they are likely to play a more prominent role in shaping future security strategies.

Islamabad Police has already begun experimenting with AI solutions including some early use cases in surveillance. These pilot initiatives shows a willingness to innovate, yet there are several essential institutional and technical prerequisites for full scale implementation. Without investment in human capital, legal structures, and governance framework, AI integration may face hindrance in the future. As AI continues to emerge in this sector, traditional methods are increasingly insufficient for addressing modern challenges. The success of these technologies depends on more than just technical solution. Institutional commitment, ethical oversight and long term planning will be crucial in promoting digital innovations that improve policing without undermining transparency, accountability or civil rights.

However, this research only scratches the surface of AI adoption in policing within the context of Islamabad Police. Future studies may focus exclusively on the technical and operational

dynamics of the Safe City system. Comparative assessments across jurisdictions such as the Punjab Safe Cities Authority (PSCA) or other police forces, can offer broader insights into regional variations and potential for replication in other urban or rural areas. Additionally, field like digital forensics and the constitutional implications of AI deployment in Pakistan law enforcement are underexplored. Further research is needed on public perception from Pakistani citizens regarding trust, surveillance and acceptability of AI interventions. The role of AI in judiciary and corrections also warrants investigations. There is a need to examine the applicability of AI systems in governance domains beyond policing including traffic regulation, emergency response, and municipal services, to evaluate how Safe City efforts might benefit other public sector institutions. While every effort was made to understand the aspects of AI integration in policing, the study was conducted from a public policy perspective. Therefore, highly specialized technical evaluations of algorithmic design or system architecture were beyond the scope of this research. Future interdisciplinary collaborations with legal and AI experts could provide deeper insights into the technical robustness, usability, and contextual suitability of these systems.

6.1 Policy Recommendations:

Beyond the Horizon

- Enhance existing infrastructure by incorporating AI technologies to improve crime prevention capabilities, shorten response time and streamline administrative functions.
- Broaden the use of AI driven tools across current systems including body worn cameras, aerial surveillance via drones, CCTV (thermal enabled), and crime prediction algorithms for targeted intervention.
- Use AI for virtual patrol: facial recognition (e.g., identifying missing persons, or age progression), threat detection (e.g., incidents of snatching, riots, drug exchanges,

harassment or tracking beggars), Fire/smoke detection, social media monitoring for weapons exposure or violent activity

- Apply AI-based forensic tools to assist police in crime scene analysis and evidence handling especially in stations lacking access to specialist teams or advanced laboratory facilities.
- NLP for case analysis including the use of chatbots to help officers in retrieving legal information, identifying case similarities, and receiving procedural guidance securely through internal databases
- Establish a centralized investigation repository powered by AI to interlink cases, suspects, and evidence across jurisdiction, pattern recognition of repeat offenders, criminal networks, and case histories.
- Automated chatbots to support the public in filing reports and making inquiries. These interfaces must support local and regional languages to overcome communication barriers and ensure inclusiveness
- AI based personnel management system that aligns officer deployment with crime trends, workload levels, expertise, and geographic priorities. This should facilitate fair case distribution and generate optimized duty rosters without manual intervention.
- Introduce a centralized digital platform for managing work force related data including duty assignments, leave schedules, performance logs, and case monitoring. This should enhance transparency, minimize fatigue and promote a well being in the policing environment
- Consider the future use cases of autonomous AI such as patrolling robots, bomb disposal and medical drones to support safety and response in high risk or inaccessible areas with appropriate oversight

- Pilot each AI solution in controlled settings to assess performance, risks and practical feasibility before large scale deployment.

Upgrade Emergency Response Systems

- Develop AI powered unified emergency systems with built in NLP capability to automatically transcribe emergency calls, extract key details, and categorize incidents by type and urgency
- Additional features should include real time alerts from social media platforms, live video input, GPS tracking and coordination with other departments e.g. rescue, hospitals, fire brigade etc

Capacity building

- Introduce AI driven smart policing alongside existing practices by research partnerships, strategic targeting, and advanced use of AI to analyze data and intelligence from both internal and external sources. This approach should support evidence based decision making, interagency collaboration, and long term organizational reform.
- Adopt a design thinking approach with a phased implementation, starting from administrative applications and gradually advancing toward more complex operational AI deployment.
- Launch pilot programs in collaboration with LEAs, Safe city, and tech experts to test AI models for different policing tasks such as predictive policing within AI sandboxes
- Strengthen infrastructure and digital readiness by deploying AI technologies at police stations to ensure widespread accessibility and operational use beyond central command structures.

- Decentralize Safe City infrastructure by establishing mini Safe City units or AI control rooms at divisional or station levels
- Pilot smart police stations in selected urban centers or underserved regions, modeled on international examples such as Dubai's Smart Police Station. Deployment should be area sensitive, makes sure that systems are cost effective, culturally appropriate and accessible based on local literacy levels and infrastructure conditions.
- Allocate sufficient budget for the development and maintenance of AI infrastructure, training, and technology procurement with support from government
- Creation of internal AI governance frameworks and practical guides or toolkits for law enforcement
- Designing AI systems in a way that are responsive to Pakistan's diverse cultural, social, and geographic contexts. It should consider local challenges and resource limitations to foster trust and minimize public resistance.
- Develop structured, secure, up to date and interoperable criminal databases across all police jurisdictions with standardized collection and verification protocols to improve quality of datasets for AI model training and addressing biasness or error.
- Consistent privacy regulations and operating procedures to promote responsible, transparent, and ethical AI use across all LEAs.

Human Capital:

- Introduce AI literacy programs for all police ranks and make sure that leadership is well-informed and capable of making strategic decisions regarding the adoption and governance of AI in policing.

- Build a top down culture of digital transformation by cultivating leadership mindset that prioritizes innovation and AI readiness.
- Design role specific training which provides basic AI awareness and skills for field officers and advance modules for technical and supervisory roles
- Modernize recruitment processes to attract candidates with AI expertise and overcome gaps caused by outdated hiring structures and limited talent pools
- Recruit AI specialists such as data scientists, AI engineers, developers, and ethics officers. New hiring should also focus on candidates with computer skills, even for police station personnels.
- Upskilling existing staff in digital tools, AI fundamentals and data handling practices to improve their performance
- Training opportunities through both internal programs, international partnerships and secondment arrangements with foreign institutions to expose officers to global best practices and evolving AI technologies.

Legal Reforms:

- Introduce a comprehensive AI Act that goes beyond law enforcement to cover broader national needs. This legislation should define the legal status, responsibilities, and ethical boundaries of AI systems across all sectors.
- Establish a clear legal framework to assure that AI-generated outputs, where applicable, are admissible in court. Legal recognition of AI systems in police is essential for their acceptance in judicial proceedings.
- Since each provincial police force currently follows its own framework, there is a need for National AI Policing Policy (NAPP). This should guide all provincial and federal

law enforcement agencies on AI tool integration, ethics, governance, and data sharing. The policy must set core principles and standards with flexibility to accommodate local and regional challenges.

Note: Without legal reforms, technological adoption by the police will remain limited and may face difficult to implement within the courts. For meaningful and sustainable implementation, Legal modernization is essential for overall criminal justice reform.

Data Ecosystem

- Robust centralized national data registry
- Data governance policy that clearly defines rules for data protection, data sharing, access controls, data privacy, and security. This policy must also include mechanisms for accountability, transparency, and regular audits.
- Create an independent regulatory body to oversee data governance at the national level. This department should manage data across all sectors (from personal to government departments and private sector records) or alternatively, establish sector specific data authorities that operate under shared protocols for secure collaboration.
- Formal cross-agency collaboration mechanism involving key institutions such as the Police, NADRA, Ministry of IT and Telecom (MoITT), Ministry of Interior, NPB, PTA, FIA, hospitals, forensic labs, and other relevant law enforcement bodies.
- Uphold data sovereignty and digital sovereignty by ensuring that Police departments retain full control over its data infrastructure, particularly in the context of foreign technologies and cloud-based AI systems.

Ethics and Social Contract:

- AI surveillance should be conducted under clear legal frameworks aligned with the constitutional rights. National and institutional policies must clearly define the scope, purpose, and limits of surveillance. Publicly disclose how surveillance data is collected, stored, and used.
- Develop transparent AI models with periodic bias audits and robust checks and-balances in training datasets to minimize discrimination
- Mandate independent ethics review boards to evaluate and monitor AI deployment in law enforcement for accountability, public trust and compliance with citizens and human rights standards

Collaboration:

- Promote integration of Safe City infrastructure with other relevant departments to enable cohesive and real time data sharing for enhanced public safety and other services e.g municipal services or district administration
- Encourage inter-agency collaboration through joint pilot initiatives and develop interoperable systems to support seamless coordination and AI-driven decision-making
- Facilitate partnerships between law enforcement agencies, academic researchers, AI developers, service providers, civil society, and NGOs to manage the transition toward AI in policing responsibly and inclusively.
- Engage local universities (e.g. NUST, QAU, FAST, GIKI, COMSAT, PU) in developing homegrown AI solutions. Student participation through joint research projects, innovation labs, and test-bed environments to reduce reliance on foreign vendors and promote sustainable AI adoption.

Public Awareness:

- Launch nationwide public awareness campaigns to educate citizens about the role of AI in policing. It should address public concerns and negative attitudes through feedback channels, open dialogue and community engagement.
- Highlight successful cases to build trust in law enforcement's digital transformation.

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APPENDIX A

Predictive Policing Through Artificial Intelligence in Pakistan: Prospects and Risks

Researcher:
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Supervisor:

Introduction:
You are invited to participate in a research study exploring the use of artificial intelligence (AI) in law enforcement for predicting and preventing crimes in Pakistan. This research is being conducted as part of my MPhil thesis in Public Policy at PIDE and the data collected will solely be used for academic purposes only. This form provides information about the study and eagerly looks forward to your active participation and support to the cause.

Purpose of the Study:
This research aims to examine how AI is utilized by the Islamabad Capital Territory (ICT) Police to enhance law enforcement. It seeks to identify the opportunities and challenges associated with AI based predictive policing and to assess its potential to improve police efficiency in Islamabad.

Procedures:
If you agree to participate, you will:

- Take part in a one-on-one interview lasting approximately 30 to 45 minutes.
- The interview will focus on your experiences, opinions, and insights regarding the use of AI in policing.
- With your consent, the interview will be audio recorded to ensure accurate documentation of your responses for analysis.

Confidentiality:

- Your identity and responses will remain strictly confidential. Your name or any identifying information will not appear in any reports, publications, or presentations resulting from this study.
- All data will be stored securely and used only for the purposes of this research. At the conclusion of the study, data will be discarded.
- The data will be analyzed and included in my MPhil thesis and may also be used in academic articles or presented at conferences, but your identity will not be linked to it.

Risks and Benefits:

- There are minimal risks associated with participating in this study.
- Your participation will contribute to a better understanding of the role of AI in policing in Pakistan, which may inform future policy decisions.

Questions:

If you have any questions about this study, please feel free to contact me.

Interview Guide (Police)

Key Informant Details:

- Designation _____
- Gender _____
- Age_____
- Education_____
- Experience (Years)_____.

General Information:

Can you please tell me about your current job role in ICT police?
How many years have you worked in law enforcement?
What is your experience with technology in policing?

Section 1

- What policing methods does the ICT police use for predicting and preventing crime? What are the basic steps involved?
- How does ICT police identify patterns or types of criminal activities? How is this information used to predict and prevent crimes?
- Can you give an example where a crime was prevented using these methods?
- Once a crime takes place, what policing methods does the ICT police use for detecting crime? What are the basic steps involved?
- Do these methods change based on the type of crime (e.g. street crime, auto vehicle theft, robbery, trafficking or others)? How are crimes categorized in this process?
- Can you provide examples of successful crime detection cases?
- Overall, how effective do you think the existing policing strategy is in reducing crime rates in Islamabad?
- Are there any major challenges you see faced by police in combating crime under the present state?
- What improvements do you think could enhance the effectiveness of these approaches?

Section 2 (A)

- Have you heard of AI or predictive policing? If yes, what do you know about it?
- How do you think AI could help the police?

(B)

- Does your station / department have any officer with AI, data science, or predictive analytics skills? If not, do you think such skills are needed for police?
- Do you have any skills related to AI or data analysis? If so, how have you used them in your work?
- In the past six months, have you or your colleagues received training on AI applications in policing? If yes, what was covered, and how useful was it?

- Are there any discussions or training sessions conducted on AI policing in the ICT Police?

(C)

- Does ICT Police currently use any AI technologies for crime prevention or detection? If yes, which specific AI tools, algorithms or models are in place, and for what purposes?

- Can you give an example of AI being used by ICT Police, if any?
- How is AI helping the ICT Police predict and prevent crimes like street crimes, auto theft, robbery, human trafficking, or gunshots?
- Is ICT Police using heat maps built from criminal records to pinpoint high crime hotspots? If yes, what strategies and software are used to prevent crime and allocate resources in those hotspots?
- Does ICT Police use AI to analyze 15 calls and respond to urgent incidents faster? If yes, how does it help?
- Is AI able to separate bogus calls from real emergencies in the 15-call system? If so, what patterns or cues might it detect?
- Does ICT police use chatbots or online tools to assist the public?
- Are drones used to monitor crime? If yes, are there any successful cases?
- Do robots take over tasks like patrolling or crowd control for ICT Police? If so, how would that work? If not, what do you think about robotics performing the tasks?
- For areas where AI models or tools are used, how have crime detection or response times changed?
- How does ICT Police allocate resources for crime reduction, and What challenges does ICT Police face in using resources efficiently?

(D)

- What types of crime data does ICT Police collect, and how is it stored (e.g. digital databases, paper records)?
- Is the existing crime data complete, accurate, and up to date enough to support AI based predictive policing?
- What are the biggest challenges ICT Police face in collecting and managing crime data?
- Does your department have the IT infrastructure to support AI tools? If not, what's missing?

Section 3

- What are your concerns about using AI for crime prediction?
- Have you encountered any problems, like bias, errors, unfair targeting, while using AI in policing? If so, how were they handled?
- Does ICT Police follow any specific policies, rules and regulations, or guidelines for ethical use of AI? If yes, what are they?
- In your opinion, how can AI driven solutions improve crime prevention and law enforcement efficiency?

- How practical do you think it is to integrate AI into Pakistan's law enforcement given resources and conditions?
- What are your thoughts on fully adopting AI in ICT Police? Why or why not?
- Any budget allocated for ai projects? Is ICT Police investing in AI research and development?

Interview Guide (Policy)

1. Predictive policing involves using data to forecast and prevent crime. What is your understanding of this concept, and how relevant it is for crime prevention in Pakistan?
2. Are there any existing policies, legal frameworks, or guidelines in Pakistan that directly address the use of AI in policing? If such policies are absent, what do you perceive to be the primary barriers hindering their formulation and adoption?
3. To what extent has the integration of AI in policing been prioritized on the policy agenda? → Could you provide specific examples of discussions, budget allocations, or pilot initiatives that demonstrate this prioritization?
4. What policy challenges do you foresee in adopting AI for policing in Pakistan? And how could these challenges be overcome?
5. What are the future plans for integrating AI into law enforcement specifically in Islamabad?
6. Do you think Islamabad Police has the technical, institutional, and financial capacity to adopt AI technologies? If not, what gaps need addressing?
7. Considering the current resource constraints and socio-economic conditions in Pakistan, how practical do you believe it is to broadly integrate AI into law enforcement practices across the country?
8. In your view, how can citizen privacy and ethical concerns be addressed and mitigated when deploying such technologies in policing?
9. What specific reforms or new policy instrument do you think are necessary to enable responsible AI adoption in law enforcement?
10. Based on your experience, how ready do you think the public is to accept AI based policing initiatives, and what makes you think that?
11. Is there anything else you would like to share that may help in understanding the policy landscape for AI in policing?