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RESEARCH ARTICLE

The Impact of Smart Safe City Initiatives on Crime Reduction in Punjab

Muhammad Murtaza Chishti
Department of Law Research, Times Institute, Multan, Pakistan

METADATA

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Corresponding author
Email: mmoeezmurtaza@gmail.com
(Muhammad Murtaza Chishti)

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ABSTRACT

Background: Constant technological developments have promoted the growth of Smart Safe Cities, which integrate surveillance, artificial intelligence, and data-based policing under one umbrella to enhance urban security.
Objective: The study investigates the effects of smart Safe City programs on street crime in Punjab. This research contributes to the urban security policy debate by providing insight into the roles performed by Smart Safe Cities in preventing crime and the guidelines that need to be adopted to further strengthen crime prevention strategies.
Methodology: Crime data before and after the introduction of smart surveillance technologies was examined to evaluate the effectiveness of CCTV monitoring, automated emergency response, predictive policing, and real-time tracking. A mixed-method approach was employed, incorporating crime statistics and police records to identify shifts in crime patterns.
Results: Analysis revealed a considerable reduction in street crime, improved police response rates, and heightened public perceptions of safety. Persistent challenges include system integration, privacy concerns, and allocation of resources.
Conclusion: The research adds to the debate on urban security policy by highlighting the contribution of Smart Safe Cities to crime prevention and by outlining necessary guidelines for strengthening crime strategies. Surveillance initiatives must also adhere strictly to Islamic ethical principles.

INTRODUCTION

Smart Safe Cities are those that employ information and communication technologies (ICT) to enhance security and improve the quality of life of residents. ICT includes surveillance systems, data analysis, communication networks, and emergency response systems. Smart Safe Cities are mainly concerned with crime prevention, situational awareness, improving the efficiency of crime investigation, quicker responses to emergencies, data-driven policing, enhancing public trust, and traffic management. Predictive analytics are used to identify crime hotspots and deploy resources in advance, while real-time surveillance of public spaces detects suspicious behavior and potential threats. Digital evidence helps in identifying suspects and building cases, while emergency response systems rapidly coordinate services and optimize resource deployment and communication. Data-driven policing directs strategy and resource allocation, while crime trend tracking identifies areas for improvement. Public confidence is strengthened through greater transparency and accountability from the police, along with community engagement and dialogue. Traffic management also benefits from technology-based enforcement of regulations and improved traffic flow control. Overall, Smart Safe Cities aim to make urban areas safer and more secure by enhancing the efficiency of law enforcement and emergency services (Ristvej 2020).

Growing street crime tendencies are new challenges in cities worldwide, particularly in Punjab, Pakistan. These are driven by socio-economic factors, policing issues, and evolving offending practices. Street crime has increased rapidly, with a growing proportion of new perpetrators. Offenders are using technology to conduct and coordinate activities such as snatching, mugging, robbery, street violence, car theft, and extortion. Challenges in managing crime and justice include poverty, unemployment, income inequality, urbanization, limited resources, corruption, and difficulties in gathering and analyzing evidence. Technological innovations also pose risks, as they can be misused by criminals. Community distrust further

contributes to underreporting and a lack of cooperation in investigations. Gang addiction fuels street offenses, while gang activity introduces elements of organized crime (Shah 2021). The Punjab Safe Cities program intends to make urban spaces more secure through technology, including video surveillance, rapid police response, and management through smart city planning. However, safety is not only about control and surveillance; it also involves trust, justice, and respect for rights and privacy. Islamic ethics guide that technology should be employed in service to society with integrity, honesty, and compassion. Surveillance, for instance, should not be used as an instrument of espionage or discriminatory targeting, but rather to prevent harm and encourage justice. Islam teaches both the protection of life and respect for privacy.

Sheikhupura, one of the developing urban centers in Punjab, Pakistan, is a major industrial and cultural town of strategic importance. Its growing population and rising crime rate pose serious challenges. The city is affected by increasing street crime, gang violence, socio-economic problems such as poverty, unemployment, and drug addiction, as well as broader law and order issues. Development brings both opportunities and challenges, requiring a multifaceted approach that includes effective law enforcement, socio-economic development, and community participation. Urbanization and population growth in Punjab have been accompanied by a sharp rise in street crimes such as snatching, robbery, and highway robbery. Criminal activity increased by 28.56% in 2023, with 1,063,518 crimes recorded compared to 759, 816 in 2022 (The News, 2024). Conventional policing has been unable to curb these crimes, leading the government to introduce the smart Safe City project. This initiative combines digital monitoring, recognition technologies, and predictive analysis to improve urban security and is currently being piloted in 18 cities across Pakistan, including Sheikhupura, Gujrat, Jhelum, Okara, and Taxila (Shahid *et al*. 2024). While preliminary results in Sheikhupura are promising, challenges remain regarding the capacity of law enforcement agencies, the efficiency of the surveillance network, public trust, and long-term sustainability. This study helps in reducing street crime, strengthening law enforcement capacity, and ensuring long-term viability in Punjab. Through this comprehensive qualitative research procedure, the study was able to construct an integrated and detailed picture of the impact of Smart Safe Cities on street crime in Sheikhupura, providing valuable insights for policy and practice.

MATERIALS AND METHODS

The research utilized a convergent parallel mixed-methods design to study the impact of Smart Safe Cities on street crime in Punjab, using the case study of Sheikhupura. In this design, data from qualitative and quantitative approaches were collected simultaneously, analyzed separately, and then merged to derive valid conclusions. The quantitative aspect of the study involved structured questionnaires and the analysis of crime statistics, with a sample size of 40 respondents. Crime statistics were compared between May and December 2024, after the implementation of smart city programs. Descriptive and inferential statistics were employed to examine the responses from the questionnaire, while crime rate analysis compared crime patterns before and after the introduction of smart city technology.

The study also analyzed the effect of Smart Safe Cities on street crime in Sheikhupura through a comprehensive qualitative research approach. The research philosophy followed interpretivism, as social reality was constructed from individual and collective experiences. A single case study of Sheikhupura was adopted as a representative example of Punjab's smart Safe City implementation. Data collection techniques included semi-structured interviews with opinion leaders such as police officials, residents, businesspersons, community leaders, and Safe City Authority officials. Focus group discussions (FGDs) were conducted to identify recurring experiences and perceptions regarding street crime and the Safe City initiative. Observational studies in public spaces were carried out to assess public behavior, CCTV surveillance, and police command center operations. Document analysis involved reviewing police crime reports, statistics, policy documents, local press articles, media reports, and minutes of meetings related to community affairs. Data analysis included transcription of interviews and FGDs, followed by thematic analysis to establish recurring and patterned themes. Coding schemes were used to categorize and organize data, supported by qualitative data analysis software. Narrative analysis was employed to highlight stakeholders lived experiences and how participants made sense of street crime and the Safe City initiative. Triangulation was used to enhance the validity and reliability of the study. Ethical considerations included informed consent, anonymity and confidentiality, data protection, reflexivity, and community feedback. Sampling techniques used were purposive sampling, snowball sampling, and maximum variation sampling. Limitations included subjectivity, limited generalizability, and restricted access to sensitive data and key stakeholders.

MULTIPLE APPROACHES TO THE EFFECTIVENESS OF SMART SAFE CITY INITIATIVES IN PUNJAB

Theoretical frameworks

Crime Prevention through Environmental Design (CPTED): It is a proactive crime prevention strategy that emphasizes the design and management of the physical environment to minimize the occurrence of crime and fear. CPTED applies simple principles like natural surveillance, natural access control, territorial reinforcement,

maintenance, and activity support. CPTED works by enhancing the perceived danger of being caught and decreasing the perceived gain from committing a crime. This approach renders criminals to carry out activities covertly. CPTED can be used in residential areas, business districts, public parks, schools, and transportation centers. The advantages of CPTED are a decrease in crime rate, improvement in safety and security, better quality of life, and better community harmony. Generally, CPTED seeks to create safer environments through management and careful design.

Routine Activity Theory (RAT) & Rational Choice Theory: Routine Activity Theory (RAT) and Rational Choice Theory are two of the most established criminology theories that attempt to account for crime. RAT emphasizes situational circumstances such as a motivated offender, an attractive target, and the absence of a guardian, stressing the significance of daily routines and behavior in providing opportunities for crime. Rational Choice Theory takes it for granted that people make choices based on balancing likely rewards and costs for performing a particular act. In crime, criminals exhibit criminal behavior when they reap rewards exceeding costs, based on the perceived risk of crime benefit, arrest, and punishment. Both theories offer useful knowledge regarding crime origin and assist in explaining and acting on criminality (Rege 2014).

Predictive policing is one of the cornerstones of smart city policing, utilizing advanced algorithms and data analysis to forecast where and when crime will occur. It enables police to strategically deploy resources, prevent crime, and intervene before it happens. Data-driven prediction utilizes algorithms to analyze enormous amounts of information, including historic crime patterns, demographic information, weather, and social media. RTCCs enable rapid response to events, establish the capacity for information sharing, and enhance operational coordination. Challenges exist, however, including algorithmic bias, data privacy, transparency, and accountability. Technology-driven community policing focuses on integrating technology into traditional community policing strategies, enhancing cooperation and trust between law enforcement and the populace (Joh 2019). Data-driven performance management improves accountability and efficiency by quantifying police performance and identifying areas for improvement. This data-driven decision-making informs resource allocation, policy development, and training programs, promoting evidence-based policing practices. Integrated smart city platforms combine various technologies and data platforms for public safety. Networked systems connect traffic management, environmental sensing, and emergency response. By prioritizing transparency, accountability, and community engagement, law enforcement agencies can leverage smart city technologies to create safer, equitable, and resilient communities. However, ethical, legal, and social issues must be addressed (Springs 2024). Therefore, the future success of smart city technologies in public safety depends on balancing innovation with ethical safeguards, ensuring that advancements not only reduce crime but also uphold public trust and social equity.

Comparative analysis of smart policing strategies in Lahore, Islamabad, and international cities: Smart policing programs are being implemented globally. Lahore and Islamabad, cities of Pakistan, are focusing on technology to increase citizen safety and enforcement efficiency. However, these cities also have their own challenges, such as urbanization, population boom, and crime trends. The police policy of Lahore is focused on integrating technology for surveillance and traffic control, whereas Islamabad's Safe City Project employs CCTV cameras to deter crime. Insufficiency in infrastructure, shortcomings in capacity development, and non-availability of resources impede high-end technology long-term induction. Islamabad's strategy is predominantly human-oriented; it added reliance on electronic media for reporting offenses. However, there is a need to address the gaps in data compatibility, digital forensics, data analytics capacity building, and security arrangements while maintaining the balance with civilian freedoms (Agha 2016). The empirical gap in the performance of technology-driven strategies in street crime control in Punjab's Safe City initiatives is vast. Despite gargantuan investments in such programs, particularly in Lahore, there is a lack of stringent empirical data that paralyzes evidence-based policy formulation, resource distribution, and, therefore, expected public security results. Safe City schemes, whose main purpose is the extensive use of CCTV networks, have been introduced as part of a wider agenda for crime reduction, situational awareness, and rapid police response. However, the reality on the ground is different. Eyewitness accounts suggest that while Safe City programs may have improved traffic control and the monitoring of certain high-profile crimes, their impact on reducing the overall rate of street crime remains doubtful. This is due to several factors:

1) Peer-reviewed, systematic evidence for regular comparisons of the effects of Safe City programs on street crimes in Punjab is not extensive.
2) Proper and robust crime statistics, as well as utilization statistics on the application of Safe City technology, are rarely available, therefore preventing unrestricted analysis.
3) It is challenging to design effective studies that separate the impact of technology-based crime prevention measures from other factors, such as socioeconomic patterns and police policies, that also influence crime reduction.
4) While CCTV surveillance may discourage crime in some areas, it will also displace crime to other, less surveilled places. This "surveillance paradox" necessitates higher sophistication in the theoretical comprehension of the spatial dynamics of crime.
5) It is challenging to guarantee problem-free

operation and upkeep of advanced technological infrastructure, particularly in power-scarce and technologically backward environments.

6) The success of Safe City initiatives depends on having the capacity to obtain citizens' cooperation and trust, yet violation of privacy and misuse of surveillance information destroy trust.
7) Civil liberties and privacy are preoccupied with intrusion and privacy abuse.
8) Effective control mechanisms and well-established legal standards can ensure ethical and responsible use of technology-driven policing techniques.

To overcome these challenges and improve the performance of Safe City programs, efforts should focus on bridging the research gap. This requires investment in empirical research, better data disclosure and access, sound policymaking, qualitative and interdisciplinary studies, addressing ethical and legal issues, and the conduct of comparative studies within other cities in Pakistan and abroad. With research and evidence-based policy, Punjab can ensure that Safe City initiatives are effectively reducing street crime and enhancing public security (Khan 2025). The limited research on AI in law enforcement is due to its novelty, constant changes, ethical and privacy concerns, and the complexity of public trust. Factors such as transparency, perceived fairness, bias, discrimination, and data security require sophisticated research methodologies. A recent report by UNICRI on "Not Just Another Tool" provides valuable insight into global public perceptions of AI in law enforcement. It highlights the public's cautious optimism, coupled with ethical concerns surrounding privacy, discrimination, and real-time decision-making. To address the research gap, it is crucial to conduct more empirical studies, promote interdisciplinary collaboration, involve communities in the development and implementation of AI-based policing strategies, and develop ethical guidelines and regulations. By prioritizing research and public engagement, AI-based policing can be used in a way that promotes public safety and builds public trust (Schiff 2025). Crime prevention through Environmental Design (CPTED) is a cross-disciplinary tool that applies to urban and architectural design to prevent crime. It addresses natural surveillance, natural access control, territorial reinforcement, maintenance, and activity support. CPTED operates on the ability of potential offenders' behavior to be manipulated by making environments less risky for crime to be accomplished. It may be used in residential neighborhoods, business buildings, public parks and squares, schools, and transport terminals. Benefits are decreased crime rates, heightened security and safety, enhanced quality of life, and improved community cohesion. CPTED is a crime prevention strategy that addresses the role played by the environment in influencing the behavior of humans (Cozens 2005). Techno-enabled policing strategies in smart cities utilize technology and data-driven policing to enhance public safety and community-police relations. Techno-enabled policing strategies focus on proactive and predictive crime prevention and response by applying data analytics, machine learning, and statistical algorithms to predict the possibility of crime. Some of the challenges are ensuring fair access to technology, managing data creation, and privacy guarantees. Data-Driven Policing and Performance Management measure police performance, determine where they must improve, and increase accountability. Integrated Smart City platforms combine several technologies and data platforms to provide an integrated view of public safety challenges, facilitate coordinated emergency response, and increase efficiency (Araujo 2017).

Smart safety cities embrace technology and evidence-led approaches for enhancing public safety, quality of life, and security perception among citizens and visitors. Smart Safety Cities embrace proactive prevention and best practices in security management for reducing crime, enhancing emergency response, enhancing road safety, engaging the community, and making fact-based decisions. Predictive analytics are used for identifying crime hotspots, enhancing surveillance, and reducing response time. Emergency services are supplemented by communications and real-time information systems, and smart traffic management systems reduce accidents and congestion. Public safety reporting infrastructure and up-to-date information are made available to citizens through online public spaces, and a culture of public and community safety. Data-driven decision making improves quality of life on average by reducing crime and improving response times (Tutak 2023).

Practical framework

Artificial intelligence (AI) is transforming surveillance, real-time monitoring, and online policing. AI platforms are capable of sifting through large amounts of audio and video information in real time, detecting patterns and anomalies that will elude human operators. It is thus automated and enabled to operate with little need for constant human oversight. AI is used to identify and prevent cybercrimes like hacking, identity theft, and fraud. AI-based security software can help detect malicious traffic and prevent cyberattacks. Ethical concerns are present, mainly regarding privacy, civil rights, and algorithmic discrimination. Privacy of the individual needs to be preserved while handling data privacy (Gautam 2025). Smart policing of safe cities has changed through technological advances, urban expansion, and advances in criminal thinking. Information technology and data systems prompted data-led policing, converging resources upon the basis of crime trends and rates. AI and predictive policing ramped up analysis and foresight. Mobile applications, social media platforms, body-worn cameras, online crime mapping, and public dashboards are utilized for information sharing and reporting. Data privacy, security, transparency, accountability, ethical considerations, community outreach, and technology

availability are issues of concern (Yamin 2020). The initial deployments of smart city technology in Europe, Asia, and North America set the stage for advanced systems today. These early projects were centered on using technology to solve urban problems, increase efficiency, and raise the quality of life. Europe was the pacesetter in integrated and sustainable solutions, with initiatives such as Amsterdam's "Amsterdam Smart City," Barcelona's "Smart City Barcelona," Copenhagen's "Green Energy and Transportation," and Tokyo's "Yokohama." These cities demonstrated the capability of technology in optimizing urban use of resources, reducing carbon emissions, and maximizing resource management. Asian cities, driven by economic development and rapid urbanization, saw early adoption of the Smart City in infrastructure development and technology. Singapore's "Intelligent Nation 2015" initiative laid the foundation for its own Smart City vision, bridging technology with various aspects of city life, including transport, public services, and security (Martin 2018). South Korea's Songdo city and Yokohama of Japan have pioneered integrated Smart City growth, taking advantage of the most advanced technologies, including sensor networks and big data analytics. North American municipalities like New York City's "311" and Chicago's "Array of Things" also focused on technology. Toronto started smart traffic infrastructure and open data to enhance city services. Such early steps towards smart cities focused on infrastructure, evidence-based decision-making, citizens' participation, integrated solutions, sustainability, and privacy, thus providing substantial lessons for other cities across the world (Dameri 2017).

CASE STUDIES ON THE GLOBAL STAGE

Singapore, London, and New York City employ intelligent policing methods to improve city safety. Singapore employs CCTV networks, facial recognition, and data analysis in preventing crime, London employs data policing in crime spot identification, and the Metropolitan Police Service employs people engagement through online discussion and openness. New York City employs CompStat models in tracking crime patterns and commander accountability. Real-Time Crime Center applies information to ready response and coordination. But their social and ethical considerations must be argued so that they can be appropriately addressed (Calder 2016). Smart policing is an international trend that leverages technology to maximize situational intelligence, decrease crime, and eliminate inefficiency (Table 1, Fig. 1). Singapore has developed sophisticated sensor systems and real-time analytics, while New York City has integrated information from multiple sources for investigation. Challenges such as data privacy, algorithmic bias, cyber-attacks, public trust, and digital space divide, and ethics are also there. Success depends on public confidence, application context, use of technology, and participation of the people. Technology and social intervention must be used responsibly and sustainably to prevent crime (Khan 2024).

The Punjab Safe Cities Authority (PSCA) is a Pakistani government program that looks to increase public safety, policing, and crime prevention. It was initiated in to bring an integrated surveillance system to major cities, with the first city being the metropolis of Lahore. The Punjab government and international partners finance the project, combining technology with police forces, traffic management systems, and intelligence agencies. PSCA also assists public communication through helplines, mobile apps, and campaigns (Maguire 2012). PSCA uses high-definition CCTV cameras in cities to identify and track down suspects with facial recognition software. Big Data Analytics and AI assist the system in predicting crime hotspots and pre-emptive measures. PSCA operates emergency call centers to reduce response time and improve emergency management. It also focuses on cybersecurity, preventing internet fraud, cybercrime, and economic crimes. PSCA performs awareness programs to raise awareness concerning crime prevention methods and emergency response. Overcoming technical challenges, PSCA has been an enormous contributor to crime prevention and law enforcement in Punjab.

The Punjab Safe City Authority (PSCA) is a technology-driven program for enhancing security, law and order, and public safety in Punjab. Created under the Punjab Safe Cities Ordinance, it collaborates with the Punjab Police to introduce new surveillance, data processing, and quick response systems. PSCA's short-term objectives are enhanced vigilance, real-time monitoring of crime, smart traffic management, improved emergency response services, and evidence-based policing. It also operates the Punjab Police Integrated Command, Control, and Communication Centre (PPIC3) and employs predictive policing and big data for predicting crime patterns. The PSCA and Punjab Police are extending surveillance to rural areas, creating AI-based crime prediction models, increasing cybersecurity, and creating public awareness by engaging with the public (Gilling 2010).

PUNJAB SAFE CITIES AUTHORITY AND CRIME COMPARISONS

The PSCA is the most significant organization in Pakistan's public safety and security, utilizing high-tech systems such as CCTV surveillance, crime-prediction systems based on AI, converged emergency response systems, a central PPIC3 hub, an e-challan system for facilitating traffic policing, and a virtual police station for women. These services aim to revolutionize policing, improve public safety, strengthen emergency response capacity, enable data-driven decision-making, and improve traffic management. The main goals of the PSCA are to secure cities using technology-driven prevention of crime, detection, and response (Basthikodi 2024). It utilizes

predictive analytics to supplement its proactive policing. It is a step in the direction of a policing and public safety revolution. Predictive analytics is used for crime hotspot mapping, risk assessment, resource allocation, and trend identification, and optimization of response times. By examining previous crime statistics, trends, and patterns, PSCA is able to predict where most of the future crimes will take place, thereby allowing police resources to be allocated where they are needed the most. With the use of machine learning and AI algorithms, it can discern patterns and associations in the data and predict future criminal behavior. Its advantages are maximized crime prevention, maximized resource use, enhanced public safety, and enhanced policing. Ethical issues of discrimination and bias must be addressed. Precision in the data is required since the quality of the output is based on the quality of the data. Finally, it is involved in crime prevention to make communities safer using predictive analytics. Ethical concerns and accuracy of data need to be ensured to allow responsible and transparent utilization of these systems (Montasari 2023). Finally, predictive analytics plays a vital role in crime prevention by supporting safer communities. Its effectiveness, however, depends greatly on the accuracy and reliability of the data being utilized. Ethical concerns, including issues of privacy, fairness, and accountability, must be carefully addressed to ensure responsible application. Transparency in processes and decisions is equally important for building public trust and legitimacy.

CASE STUDIES OF SMART SAFE CITIES IN PUNJAB: LAHORE, RAWALPINDI, MULTAN, AND FAISALABAD

Smart policing is being extended to urban cities in Punjab, including Lahore, Rawalpindi, Multan, and Faisalabad. This modernization includes Safe City Projects, which use CCTV surveillance networks, command and control centers, and AI for real-time monitoring and crime detection. Smart Police Stations are being created to improve efficiency and citizen participation. Data-policing helps identify crime hotspots, forecast trends, and enhance resource deployment. Technology integration helps law enforcers curb crimes, such as property-related crimes. However, challenges such as data privacy, algorithmic bias, infrastructure constraints, public trust, and cost constraints need to be addressed for the responsible and ethical use of these technologies (Hong 2022).

Street crime rate analysis in urban Punjab cities is a complex process involving knowledge of socio-economic determinants and data availability. High crime rates are determined by poverty, unemployment, income inequality, population density, and urbanization. Crime rates, place, demographic information, police response time, arrest and clearance, and socio-economic information are the key predictors. Statistical modeling and Geographic Information Systems (GIS) are employed to identify trends and patterns over time. Data sources employed include the official Punjab Police website, Punjab Bureau of Statistics, and Pakistani research institutions and universities (Haider 2015). "The key indicators are the decrease in crime rate, clearance rate, response time, public safety perception, and arrest rate. The research will establish whether the intervention through the Smart City is successful or not, whether it leads to decreases in crime rates in specific locations, or whether there are partial results (Tariq 2024). Sheikhupura, a district of the province of Punjab in Pakistan, once well known for its past glory and richness in agriculture, was faced with an ugly situation: an outbreak of street crime, supremacy of gang culture, and failure of traditional models of policing. This convergence of causes produced a climate of insecurity and fears that has destabilized the social fabric and quelled the growth of the district. To get to the root causes of this crisis, one would have to explore the field of socio-economic dynamics, the criminal network's history, and the local police saga (Shahid *et al*. 2024). Sheikhupura, a district of Punjab province, is facing a multifaceted socio-economic problem that is leading to an increase in the crime rate. Unemployment and poverty among the population, urbanization, and slum development are adding to the problem. Social injustice, drug addiction, and improper access to education are also adding to the problem. Illegal gangs have developed from street crime to criminal gang outfits, victimizing susceptible businesses and individuals. Gangsterism has also expanded, with legal criminal gangs dominating the majority of criminal enterprises. Instability in the region is also caused by corruption claims against criminal gang activities and political actors. Online crime, like internet blackmail and scams, has also become prevalent because of improvements in technology. Sheikhupura police force is overwhelmed with fighting the incidence of crime, with limited resources and no exposure to modern policing techniques. Inefficiency and corruption have produced a lack of confidence in the police. Coordination and communication within society, enhanced public awareness programs, and application of technology to make the criminal justice system more efficient are needed to reverse this trend. The correctional system is redirected towards rehabilitation and social reinsertion (Shahid *et al*. 2024).

The intelligent policing strategy of Punjab relies on sparse crime records and socio-economic factors like unemployment, poverty, and urbanization. Emerging technologies like cybercrime also have an impact on the trends in crime. The strategy includes Safe City Projects, which utilize networks of CCTV surveillance, data processing, and communication systems for situational awareness, crime deterrence, and improved police response. The project command center, the PPIC3 center, addresses traffic management, crime detection, and public safety. The expected results of intelligent policing are crime prevention, enhanced detection, response time, and enhanced public

Table 1. The crime statistics from May 2024 to December 2024

Types of crime	May. 2024	Jun. 2024	Jul. 2024	Aug. 2024	Sep. 2024	Oct. 2024	Nov. 2024	Dec. 2024
Crime against property	271	377	322	100	94	93	84	62
Dacoity	8	7	5	1	2	0	0	1
Robbery/ snatching	122	120	92	37	28	40	32	19
Vehicle theft	106	125	109	55	49	39	39	31
Vehicle snatching	5	9	11	3	2	5	5	2
Burglary	24	34	37	4	13	9	8	9

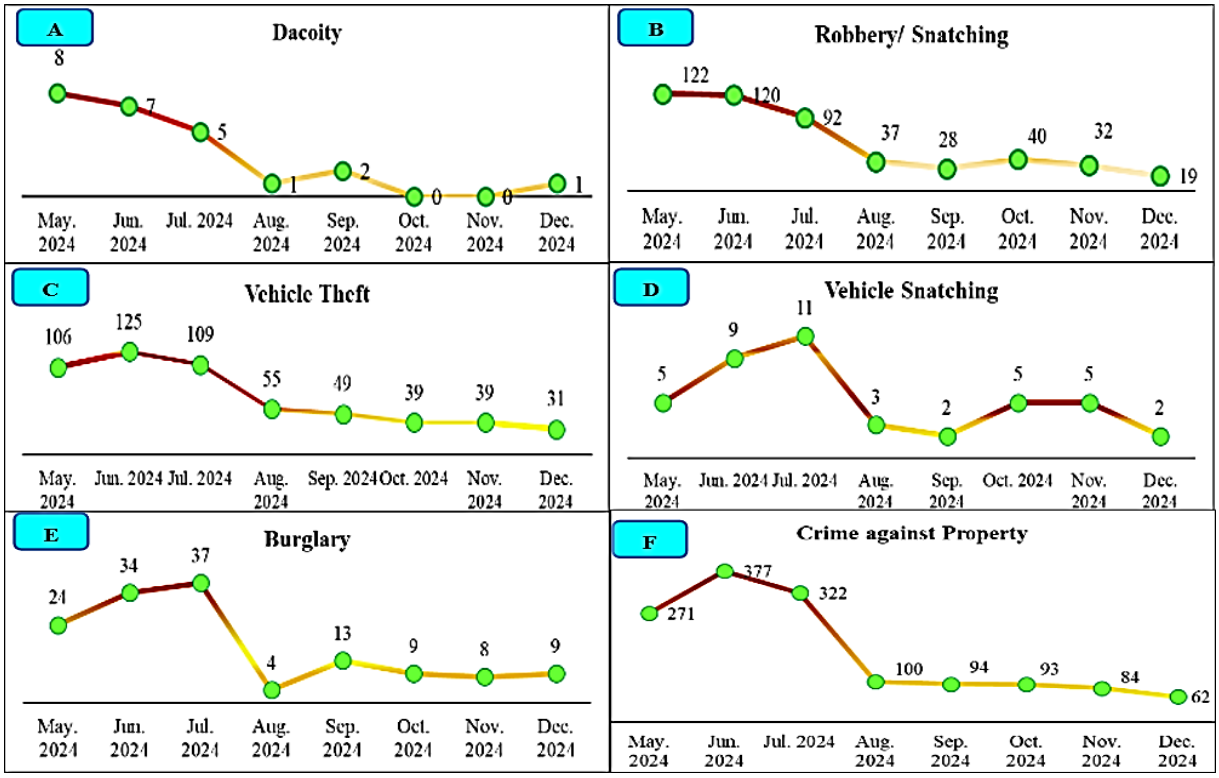

Fig. 1. The crime statistics from May 2024 to December 2024. (A) dacoity, (B) robbery/snatching, (C) vehicle theft (D) vehicle snatching, (E) burglary, and (F) crime against property.

security. Shortcomings, however, are data confidentiality, algorithmic bias, infrastructure constraints, and socio-economic conditions. There must be systematic interrogation and examination in order to measure the efficacy of intelligent models of policing to solve the annoyance wrought (Cheema 2017).

Smart policing will bring down mugging, robbery, snatching, and street violence in Punjab. Some limitations of smart policing are also there, including high crime rates, a lack of proper monitoring, fear-based violence, and complexity in investigation. Smart policing can prevent opportunity crimes, enhance investigation, and optimize response time. Intelligent policing also needs to take care of the issue of gangs, drug deals, and the involvement of the community. It should have a comprehensive plan that includes the gathering of intelligence, community liaison, and collaboration with law enforcement (Harding 2019). The Punjab Safe City projects in Pakistan have lowered rates of crime greatly, particularly in hotspots. The significant impacts are reduced property crime, such as robberies and motor vehicle theft, and better data analysis and monitoring, leading to the rapid arrest of criminals. Lowering emergency helpline calls regarding serious crimes and street crimes means a positive role of the Safe City projects. Live monitoring and control centers enable quick response by the police to incidents, enhancing crime deterrence and intervention. Mass installation of CCTV cameras and other monitoring devices gives a perception of increased surveillance, deterring crime hotspots, and enhancing public safety. Traffic management is also

included in Safe City projects, using technology like AI and Automatic Number Plate Recognition (ANPR) cameras to monitor traffic rules. Technology deployment, combined command centers, and data-based policing facilitate such an improvement. These, however, require due consideration of the reliability of crime data, privacy issues, and socio-economic conditions while quantifying the effect of such schemes. Crime displacement is not avoided but rather happens at other places where there is lower vigilance. In conclusion, while the Punjab Safe City initiatives have been successful, they require keen continuous oversight and ethical standards to ensure long-term success (Ashraf 2023). Crime displacement occurs when crime prevention initiatives within a specific location drive criminal activity to neighboring regions. It is also possible that it can be driven by technology, where Safe City initiatives can deter crime but may push it to less-watched locations. Integrative crime prevention focused on socio-economic conditions, community engagement, and police is important. Statistical evaluation and continuous monitoring are important in measuring whether there is potential displacement impact and setting unforeseen consequences (Reppetto 1976).

Punjab Police has introduced an Electronic Challan System, which is linked with the Red-Light Monitoring System (RLMS) and Journey Time Monitoring System (JTMS) for serving traffic offense notices to defaulters. Defaulters are given a chance to pay fines online, while hand-held terminals enable officials to serve no-license or wrong-license notices. The system has enhanced service delivery by providing integrated services such as Rescue 1122, firefighting, and disaster. The scheme has minimized crimes such as rioting, destruction of properties of public and private properties, and motor vehicle-related crimes. Preventive technologies ensure real-time monitoring of processions and law and order situations, enabling effective resource deployment and efficient emergency response systems. Police operate through a dedicated LTE/4G network that facilitates secure communication, thereby strengthening coordination and delivery of public safety and emergency services. Enhanced policing of public spaces, better allocation of police personnel, and improved command and control facilities have collectively contributed to greater security for the capital city, its residents, and visitors (Ahmad 2021). The Data Protection Policy (DP3) is a policy that all users of PSCA data, including those gathered through PSCA infrastructure and communicated via social and electronic media. It requires that officers not intentionally record any act of a natural person violating rules unless there is reasonable cause to believe that the person is committing or attempting to commit an offense. Officers should remain vigilant while collecting information on women and children and should not use or retain information on personal devices without authorization from the competent authority. They should also refrain from monitoring citizens' private domains unless it is necessary and proportionate to legitimate needs. Officers must not share objectionable photographs or videos that could infringe upon the rights of the parties involved. Any breach of DP3 shall constitute misconduct and will be dealt with against officers and employees. Operators' contracts will be terminated as a result of DP3 breaches, without prejudice to other legal liabilities.

CONCLUSION AND FUTURE PROSPECTS

The Sheikhupura Safe City project has adopted technologies such as CCTV surveillance, data analysis, and real-time monitoring to improve the effectiveness of law enforcement. However, challenges remain, including crime displacement, socio-economic issues, technical and operational difficulties, public trust, data privacy, and the availability of integrated crime data. The success of the project relies on camera quality, network stability, and the efficiency of law enforcement. Future directions emphasize systems-based, evidence-driven assessment, citizen participation, timely technology updates, protection of privacy, and greater transparency. AI policing measures hold long-term potential, but it is the responsibility of Safe City Authorities to ensure strong data security, interoperability, public trust, openness, and responsiveness. AI-based policing can evolve from individual applications to a broader approach, but this requires a balance between high moral values, data protection, and citizen participation.

DATA AVAILABILITY

Not applicable to this paper

ETHICS APPROVAL

Not applicable to this paper.

FUNDING SOURCE

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