Use of Technology to Fight Crimes in Lahore and Karachi

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Abstract

With rapidly growing urbanization, the cities are now becoming the major business and economic hubs. They house millions of people and industry and are central to the modern way of living. However, this growth also brings significant challenges for city administrators, particularly in ensuring safety and security. As technology advances, governments worldwide are adapting their processes to meet the evolving needs of urban centers. Safety and security are critical to maintaining a peaceful environment essential for business, economic growth, and other societal functions. Police organizations are increasingly turning to modern technologies to combat rising crime in urban areas, and Safe City projects have emerged as one of the most innovative solutions. These initiatives not only focus on crime control but also incorporate traffic management, secure communication, data analytics, and support for civic agencies. This paper explores the effectiveness of the Lahore Safe City project, highlighting its strengths and areas for improvement. As the Punjab government plans to expand this initiative to 18 additional cities and Sindh looks to establish a Safe City project in Karachi, the analysis of Lahore's experience offers valuable lessons. By examining the shortfalls that have hindered the full potential of the Lahore project, this paper aims to guide future efforts, ensuring these.

Keywords: *Safe City Project, Crime Prevention, Predictive Policing, Digital Surveillance, Urban Policing, AI in Policing, Facial Recognition Technology, Crime Mapping.*

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1. Introduction

The safety and security of citizens is the primary responsibility of the state. While acknowledging the importance of this aspect, the founder of Pakistan Quaid-e-Azam Muhammad Ali Jinnah in his address to the Constituent Assembly, said:

"You will no doubt agree with me that the first duty of a government is to maintain law and order so that the life, property, and religious beliefs of its subjects are fully protected by the State....…if we want to make this great State of Pakistan happy and prosperous we should wholly and solely concentrate on the well-being of the people, and especially of the masses and the poor". (National Assembly of Pakistan, 1947)

Karachi and Lahore are two major urban centres of Pakistan housing millions of people, important businesses and industries. These densely populated urban centers, combined with limited resources and traditional policing methods have made it difficult for police to keep pace with the evolving nature of the criminal activity and resultantly, crime in both cities has been on the rise (Geo News, 2024). The government, police and other law enforcement agencies are continuously trying to curb the menace of crime and using multiple options to achieve this objective.

Technological interventions have changed the dynamics of governance over last decade, including policing. In Pakistan, Islamabad was the first city to have a Safe City project, followed by Lahore. Now a similar project is being established at Karachi as well. (The Nation, 2024) Different technologies ranging from surveillance cameras and facial recognition software to data analytics and digital forensics are being used to enhance crime prevention and improve investigation and prosecution. This technological transformation has the potential to revolutionize the way crimes are addressed, enabling police to predict, prevent, and respond to crime more effectively.

In the Safe City project, the use of technology is not limited to hardware and software solutions. It also involves the adoption of data-driven approaches, such as predictive policing and crime mapping, which enable police to identify crime hotspots and allocate resources more efficiently. Furthermore, technology is facilitating better collaboration and information sharing between different agencies breaking down silos and enabling a more coordinated response.

Punjab Police and Sindh Police are using multiple technologies to fight crime and make their societies safer. These include various software, IT initiatives, applications and other tools which are helping police to track and trace criminals. However, the most significant and comprehensive initiative is the

Safe City project which is being termed as a model to be replicated in other cities. (Khosa, 2020) This project was launched in Lahore in the year 2018 and now it is being replicated in Karachi. Urban centres, in particular, face the grave challenge of street crime. Hence, this research focuses on the Safe City project and its impact on street crime in Lahore and further analyses whether a similar project in Karachi is viable or otherwise. The street crime data of last ten years (2014-2023) has been used for analysis.

This paper seeks to bridge the information gap regarding the true impact of the Lahore Safe City Project on street crime, while also evaluating whether the same model can work in Karachi. By examining the street crime data from the past decade (2014-2023), this study aims to provide a clearer understanding of the practical effectiveness of these interventions and their potential to revolutionize law enforcement in Pakistan's major urban centers.

1.1. Research Questions

- What is the impact of the Safe City Project on the prevention and detection of street crime?

- What are the factors which hinder optimal performance of the Safe City project?

2. Literature Review

According to Darrell (2017) the public safety is an important aspect of contemporary life. He argues that in a world that is chaotic, dangerous, and volatile, it is difficult to have economic prosperity and social cohesion without appropriate safety. People need security to live daily lives and undertake business and other tasks. This is especially true for urban centres. According to UNICEF, 70 percent of people around the world will live in cities by the year 2050. This trend toward urbanization will necessitate new operating models and pose challenges in terms of how to protect residents.

Tombul (2015) claims that traditionally, law enforcement agencies in Pakistan especially police have had an adverse relationship with technology. Police in Pakistan mostly rely on traditional practices to perform most of their functions and duties. However, technological advancements over the last decade have provided law enforcement agencies with options to utilize a wide range of innovations in different police operations to improve efficiency and effectiveness. These include mobile data analysis, crime mapping, biometrics, forensics, fingerprints, DNA analysis, facial recognition, automated number plate reading, speech recognition and CCTV Cameras which are assisting the police a great deal in fighting crime.

Fedorov (2012) explains that from a global perspective, the Safe City project has been termed a reliable solution that provides a variety of integrated solutions which not only facilitate the working of individual departments but also facilitate its integration with the central system. The Safe City offers a multi-dimensional coverage including video surveillance and video analytics, emergency communications, public address and general alarm, media, etc. and support for a sustainable expansion of the present and future services making cities safer.

According to Ahmad (2021), the Safe City and other digital initiatives are part of a transformation effort to upgrade policing in Pakistan and represent a substantial investment in rebuilding the trust of citizens in the state and its law enforcement apparatus. For a country which has suffered decades of violence and terrorist attacks, the introduction of a new security system is meant to be reassuring, representing a significant improvement in government capacity.

Aden et al, (2021) describe that the Safe City project offers multiple services which include emergency response to calls made on police helpline 15, live surveillance of the city through CCTV cameras, secure police communications, electronic evidence collection, public awareness, improved service delivery and crime reduction. Additionally, an intelligent traffic management system is also part of the project. An E-ticketing system, which uses Artificial Intelligence (AI) to identify drivers committing various other traffic violations has also been implemented in Lahore.

To summarize, in the words of Devi (2019), the Safe City is an idea in a community that uses technology to help governments, communities and businesses reduce the possibility of crime and provide an environment where people feel safe and secure. Whereas according to Khosa (2020), an accomplished police officer, the use of technology and the Lahore Safe City project are a model which should be replicated in other cities as well. He further elaborates the model in detail analysing its impact on reducing terrorism and improving overall sense of security of the citizens.

Review of literature suggests that Pakistan is not the only country to have a Safe City project. The use of technology to fight crime is a global phenomenon and each country is trying to take the lead by establishing more sophisticated systems. According to Huawei Technologies, they have deployed more than 100 Safe City projects across the globe in more than 30 countries including Saudi Arabia, Kenya, Mexico, Singapore, Malaysia and China for making cities and communities safer. (Jianhua, 2024)

However, according to Allam (2019), alongside these developments, there are concerns about the potential for surveillance abuse and the need for robust

safeguards to protect individual rights. The emergence of Big Data, accelerated through Artificial Intelligence and the contemporary concept of safe cities, raises concerns about privacy and good governance that impact urban fabric's socioeconomic and liveability dimensions.

The current research predominantly focuses on the implementation and initial impact of the Safe City project in Lahore. Since there is a significant gap in comprehensive studies analysing the long-term effectiveness of these initiatives, particularly in reducing street crimes. This research aims to fill this gap by examining the Safe City project in Lahore, its role in reducing street crime, and evaluating the viability of replicating a similar project in Karachi.

3. Research Methodology

For the compilation of this paper, a mix of qualitative and quantitative techniques has been employed. The research data has been obtained from both primary and secondary sources.

For primary data, the interviews with senior police officers serving in Lahore and Karachi were conducted and responses were recorded. These were extremely helpful in providing insights into the intricate mechanism of policing deployed in both megacities, efforts made by police and the impact of technology. Since the use of technology in the police is not limited to Safe City, hence the data of IT initiatives taken by Punjab and Sindh police was also obtained in an attempt to understand their impact on crime reduction.

A survey was also conducted involving Investigations Officers (IOs) of Lahore police to understand their perspective about the Safe City project and its operations. A sample size of 100 officers working in the field was selected. The officers from all 84 police stations of Lahore were engaged to get a holistic view of the issues and challenges. The survey was done in the form of a questionnaire and responses were tabulated for the analysis using MS Excel Software as a tool. The responses provided detailed insights highlighting various shortfalls in the overall policing system.

The secondary data relating to street crime for a period spanning over the last decade was obtained from the Punjab Safe Cities Authorities Lahore, the office of the DIG Operations Lahore and the office of the Capital City Police Officer Karachi. The data was then analyzed in detail to identify the annual crime trends prevalent in both the cities. A time series analysis and graphical representation were used as tools for identifying the crime trends. Time series analysis is a specific way of analysing a sequence of data points collected over an interval of time, hence taking annual crime a reference, the analysis was conducted.

The secondary sources including books, papers, journals, articles, news items and material available on the internet were also consulted to seek insights into this important subject. Since the details given in these sources are mostly descriptive, hence the key points emerging from the discussion were identified and listed for further analysis.

For comparative data analysis of Lahore and Karachi and to study the impact of the Safe City, "Interrupted Time Series Analysis" was used as a tool. ITSA is a quasi-experimental design that enables researchers to estimate causal effects. It is used to evaluate the longitudinal effects of interventions using a regression model. In this paper, the simplest form of the ITS modelling approach has been used assuming that all other variables are constant. This analysis helped in identifying the impact of Safe City project on street crime.

A comprehensive SWOT analysis of the Lahore Safe City project was also conducted to understand the strengths, weaknesses, opportunities and threats confronting the organization. Input from PSCA and insights obtained about its working during the course of research helped in making it more meaningful. This is an important analysis as it can serve as a lead for the Karachi police to learn from the experiences of Punjab police and avoid facing the same issues in their Safe City project thereby gaining better outcomes.

The comprehensive analysis of both primary and secondary data allowed for the identification of critical areas for improvement. By summarizing the entire discussion, key challenges were pinpointed. To ensure that the recommendations are practical and impactful, Pareto's principle was applied. This principle helped in prioritizing the recommendations that would yield the most significant outcomes, enabling practical improvements in the systems and processes of the police organizations in Lahore and Karachi.

The research methodology employed in this study was chosen to provide a holistic view of the use of technology in combating crime in Lahore and Karachi. By integrating quantitative data, qualitative insights, secondary research, and practical surveys, the study offers a thorough analysis of the impact of Safe City project on reduction of crime. This comprehensive approach ensures that the findings are well-founded and provide actionable recommendations for enhancing the effectiveness of police operations.

4. Results/ Discussion

The development of modern society has resulted in a range of different and complex social and environmental issues. The world has seen several dynamic changes in the last few years like increasing rates of population, integration of global markets and digital economies, international migration and

technological advancement. (PSCA, 2015) Whereas these rising challenges have created issues for law enforcement agencies, on the other hand they have also created numerous opportunities for innovation and modernisation. Capitalising on modern-day needs, organisations working on a traditional model have a grand opportunity for leap-frogging into the future by adopting modern technology.

4.1. Initial Assessment of Existing Policing System

he current law enforcement system in Pakistan faces two major challenges. First, it operates reactively, with actions initiated only after an incident occurs. Second, agencies often work in silos, withholding information from each other, which hampers collaboration, leads to redundant efforts, and weakens overall security.

In Punjab, except for Lahore's Safe City initiative, there is no central crisis response system capable of handling large-scale events. Outdated communication systems, such as insecure wireless networks, mobile phones, and landlines, are still prevalent, and during telecom outages, operations are severely disrupted. Formal communication remains paper-based, with little to no digitization in operational matters, leading to inefficiencies in reporting and data management.

Traffic management systems, particularly in major cities like Lahore, are under strain, with traffic congestion worsening due to a lack of scientific analysis for managing flow. While some digital traffic signals exist, they are insufficient. Cybersecurity is also neglected, and the recent cyber-attack on Islamabad's Safe City project highlighted the urgent need for better security measures.

Field operations lack standard procedures, leaving responses to emergency situations largely at the discretion of individual officers. Although various reform initiatives have been introduced, they remain fragmented and lack a coordinated strategy, diminishing their overall effectiveness in improving law enforcement.

4.1.1. What is a Safe City Project?

The Punjab Police Integrated Command Control and Communication Centers (PPIC3), also known as Safe City projects, are established by the Punjab Safe Cities Authority (PSCA) to assist law enforcement in using advanced technology to ensure public security. The Lahore Safe City project, the first of its kind, was launched in January 2018 at a cost of $150 million, with Huawei Technologies as the primary partner. It includes 8,000 cameras, 1,200 Automated Number Plate Recognition (ANPR) cameras, and 600 Facial Recognition (FR) cameras. With a total human resource of 803 IT-trained

officers, the project's annual budget is Rs 3.67 billion, with Rs 782 million allocated for system maintenance (Ms. Fakhra, Focal person PSCA, personal communication, July1, 2024)

The PPIC3 system supports police with various services, including an Emergency Call Centre for responding to distress calls on the 15 helpline, a Dispatch Centre to direct police units, a Video Monitoring Centre to monitor public spaces, and an Operations Monitoring Centre to oversee security across the city. The Crisis Management Centre handles responses to large-scale incidents, while the Media Monitoring Centre tracks media coverage to inform management of major events. There are dedicated centers for investigation support, data analysis, network operations, and system security.

The project's technological arsenal includes ANPR and CCTV cameras for real-time monitoring, crime mapping, and facial recognition technology linked to the Criminal Record Office (CRO) database. This automated system can identify criminals or track vehicles involved in crimes. The intelligent traffic management system controls 129 signals and uses AI for e-ticketing, enforcing traffic laws and reducing congestion. In addition, mobile applications like the PSCA Public Safety and Women Safety apps enable users to seek police help more efficiently by sharing their location in real time. Although not all areas of Lahore are covered by Safe City cameras, efforts have been made to integrate privately installed cameras into the system.

4.1.2. Intended Outcomes of the Safe City Project

The Safe City initiative aims to modernize policing by integrating advanced technology to address urban crime effectively. It represents a shift towards technology-driven policing, which traditional methods cannot achieve (Punjab Police, 2024). The primary goals of the Safe City project include reducing crime rates, improving investigations, and creating a safer environment for citizens.

1. **Reduced Response Time:** The system aims to lower police response time from 20 minutes to 7-9 minutes by using heat maps to place resources near crime hotspots and track police vehicles in real-time.

2. **Improved Traffic Management:** With 129 traffic signals linked to a central control system, the project seeks to improve traffic flow and reduce congestion. AI-based e-challan systems are also expected to enhance law enforcement and reduce accidents.

3. **Electronic Evidence Collection:** The project's 8,000 cameras are expected to provide real-time digital evidence for major crimes, aiding in the swift identification and arrest of culprits. This evidence is admissible in court under strict protocols for maintaining its integrity.

4. **Predictive and Proactive Policing:** AI tools such as heat maps and crime trend analysis are expected to shift policing from reactive to proactive, allowing law enforcement to guard specific high-crime areas and times effectively.

5. **Improved Information Base:** Technologies like facial recognition and ANPR will generate data 24/7, allowing police to study crime patterns, track criminals, manage traffic, and enhance overall safety.

4.1.3. Recent Initiatives of PSCA

PSCA has recently come up with a cost-effective and scalable model titled "Smart Safe Cities Project" incorporating the latest technology for improving and developing sustainable and secure cities across Punjab. The latest Smart Safe Cities project's initial implementation will cover 18 districts in Phase I, extending to the remaining districts in Punjab in Phase-II, and focusing on the development of PPIC3 centres at the tehsil level in Phase III. This project will also enable local administration to tackle civic issues such as environment, waste management and traffic management etc. The technology used in these projects has been developed locally by the Punjab Information Technology Board. This is a significant development as it will help reduce dependence on foreign technology companies for the software deployed in Safe City projects.

These outcomes collectively aim to enhance the efficiency and effectiveness of policing in Lahore, contributing to a safer urban environment.

4.1.4. Digital Technologies Used by Karachi Police

Although Karachi does not yet have a full Safe City project, the police are utilizing various digital technologies to combat crime (Sindh Police, 2024). Since 2012, a Video Surveillance System with 2,077 CCTV cameras at 504 key locations has been in place, along with additional coverage at 40 toll plazas. Automated Number Plate Recognition (ANPR) and Facial Recognition systems, integrated with AI features, help in tracking suspicious vehicles and individuals.

Additionally, Karachi police use several other technologies for law enforcement, such as Call Data Record (CDR) analysis to trace suspects through phone data and DNA analysis for crime scene investigations. Traffic management is enhanced with a digital ticketing system, increasing transparency and accountability. Body-worn cameras are used to improve interactions between police and citizens, promoting accountability.

Other technologies include a Criminal Record Management System, which digitally stores biometric data of criminals, and a Police Station Record

Management System that digitizes station records for greater transparency. The Complaint Management System ensures timely police responses by logging citizen complaints digitally, while the Hotel Eye Management System tracks hotel guests, preventing criminals from hiding in rented places. Investigation tools like lie detectors and the Talaash App further assist in securing the city.

Despite these advancements, a Safe City project differs from a basic surveillance system. It integrates multiple technologies, such as AI-driven crime mapping and proactive policing tools, offering a comprehensive, coordinated approach to improving urban security—something that Karachi still requires.

5. Analysis and Key Findings

5.1. Crime Data Analysis of Lahore (2014-2023):

To analyze the impact of the Safe City project on the trends of street crime, crime data of Lahore for the last ten years i.e. 2014 to 2023 has been obtained and analyzed in detail. Details are given below: (DIG Operations Lahore, 2024)
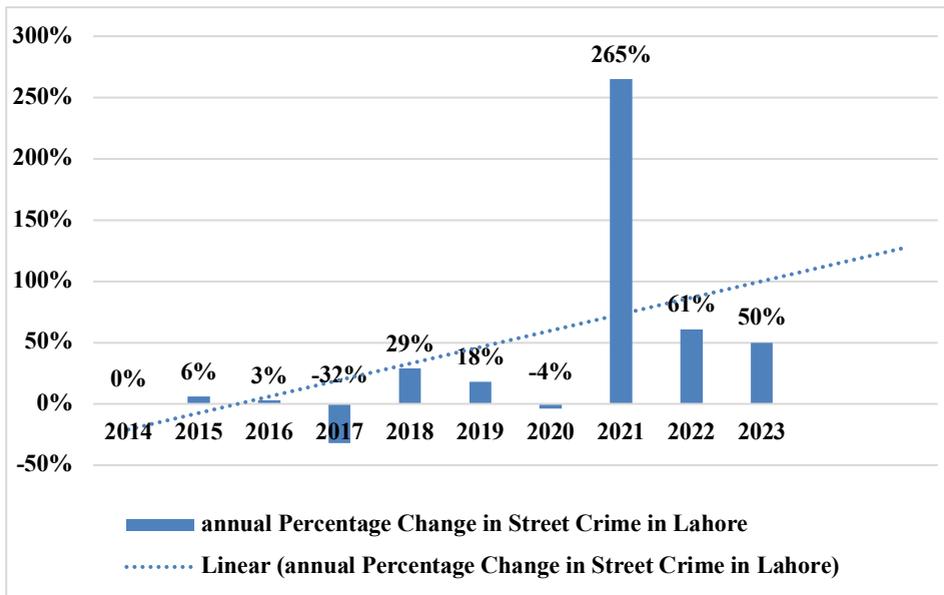

Figure 1. *Annual Percentage Change in Street Crime in Lahore*

As evident from the aforementioned trend analysis, the street crime in Lahore is on a steady rise. In the year 2015, crime rose by 6%, and in the year 2016 by 3% before witnessing a decline of 32% in the year 2017. The Lahore Safe City

project was inaugurated in January 2018 (Punjab Police, 2024a). However, despite the project being fully functional crime rose by 29% in 2018 and a further 18% in year 2019. The year 2020 saw a slight decline in crime i.e. 4% before it skyrocketed and went up by 265% in year 2021. Further increases of 61% and 50% in years 2022 and year 2023 took it to further new limits.

To study the impact of Safe City project on street crime, it is important to note how many cases were traced with the help of Safe City i.e. in how many cases the evidence was provided by Safe City to Lahore Police. The data of evidence provided to Lahore police has also been obtained to gauge its impact on crime. Details are given below:

Table 1.

Evidence Provided by PSCA to Lahore Police (2018-2023)

Year	Evidence Delivered		Total Cases	Percentage
	Robbery	Snatching		
2018	379	76	3577	12.72%
2019	481	94	4220	13.62%
2020	413	144	4038	13.79%
2021	622	262	14751	5.99%
2022	1558	539	23762	8.82%
2023	1691	905	35573	7.29%

As evident from the aforementioned data, the evidence has been provided by PSCA to Lahore police in multiple cases, however, the percentage remains extremely low in terms of total crime taking place in the city and this percentage too, is declining. Since the evidence detection and collection system at PSCA is activated only once the police officer reaches out to the PSCA, hence it is evident that Lahore police have not been able to approach and fully utilize the potential of the Safe City project for tracing criminals and obtaining evidence.

A survey was conducted during the course of research for identifying the reasons hampering the coordination between PSCA and Lahore Police and causing issues for the IOs. The survey was done in the form of a questionnaire and a group of 100 IOs was selected representing each of 84 police stations of Lahore. The IOs cited following reasons for not availing the evidence facilities available at PSCA.

- Overburdening Workload   42%

- Cumbersome Procedures at Safe City   28%

- Non-functional Cameras   13%

- Out of Coverage Area   09%

- Others   08%

Concerning the unmanageable workload of the Investigation Officers, the data was obtained from the office of DIG Operations Lahore. The data analysis shows that in the year 2023, a total of 365330 cases were registered in Lahore whereas 2134 Investigation Officers are available to investigate these cases. This shows that on average an IO has to investigate 171 cases annually i.e. he has only two days to complete the investigation of a case whereas the law provides 14 days for completing the investigation process. As per standards approved by the Central Police Officer, an officer can investigate a maximum of 20 serious cases (Murder etc.), 40 normal cases and 70 cases of local and special laws in a calendar year. As evident from the figures, it is not humanly possible for the IO to investigate this abnormally high number of cases in such a short period. Hence this reason explained by the IOs is well-founded and needs to be addressed. (DIG Operations Lahore, personal communication, June 3, 2024)

With regards to processes and protocols being observed at PSCA, the Chief Law and Procurement Officer was contacted who explained that to ensure the sanctity of evidence and its chain of custody, a standard operating procedure has been adopted. Every IO reports at the main reception of Safe City to obtain evidence where they submit their mobile phone and their details are recorded. Subsequently, they proceed to the Electronic Data Analysis Centre where they submit details of the case including a copy of the FIR. A dedicated officer of Safe City is then assigned to the case who looks for evidence. In case the evidence is found, it is provided to IO on a CD after filling out a form. The process of finding evidence is time taking and due to non-functional cameras and power outages, valuable evidence is often lost. Mobile phones are not allowed on the premises and footages are not provided on WhatsApp. This procedure is being termed as inconvenient and cumbersome mainly due to the confiscation of the mobile phones, the time taken to find evidence and the non-provision of footage through email or WhatsApp.

About non-functional Safe City cameras, as of 1st June 2024, a total of 5259 Safe City cameras are functional out of 8000 installed in Lahore and the number varies daily due to multiple factors including power outages, development works in the city and weather conditions. Non-functional CCTV cameras of

Safe City are also one of the reasons which result in the wastage of valuable evidence. When asked about the coverage area of Safe City cameras it was explained that Safe City has not expanded at the same pace with which Lahore city has developed hence more and more populated areas are left without coverage. In addition, due to issues with Huawei regarding the maintenance and replacement of cameras in the past, around 3000 cameras went offline which are now being replaced under a new arrangement. (Personal communication with the focal person of PSCA, June 1, 2024)

The help and assistance provided to Lahore Police by PSCA is not dependent on the occurrence of crime alone. PSCA officers perform duty round the clock and monitor public spaces. In case of any suspicious activity, it is reported immediately to local police, who respond to the crime. This proactive approach is also a key feature of Safe City project and it can help local police immensely in preventing and detecting the crime. In addition, the information concerning other civic services like cleanliness, encroachment, presence of beggars on roads, roads requiring repair, accumulation of water after rainfall etc. is also communicated to the concerned departments for necessary action at their end.

5.2. Crime Data Analysis of Karachi (2014-2023)

To analyze the crime trends, crime data of Karachi for the last ten years i.e. 2014 to 2023 has been obtained from the office of Capital City Police Officer Karachi and analysed in detail. Details are given below: (Capital City Police Officer Karachi, 2024).

Figure 2.

*Annual Percentage Change in Street Crime in Karachi*
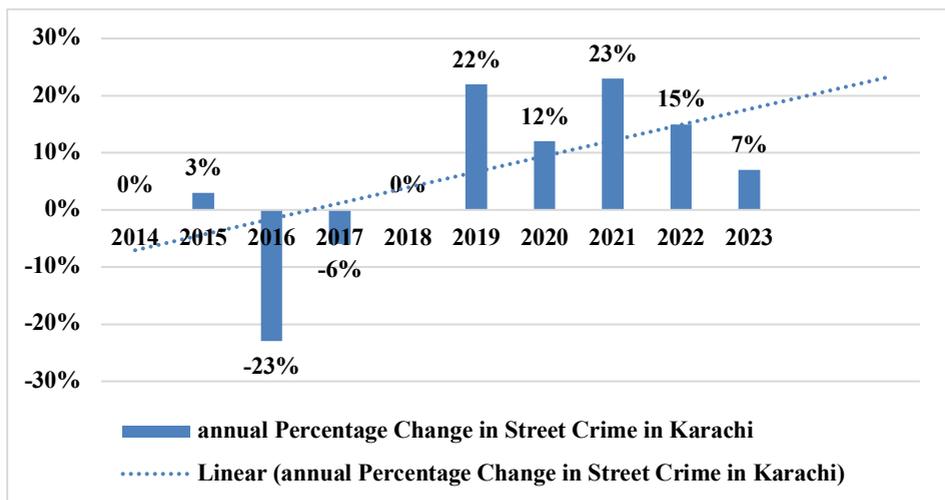
Analysis of the data on street crime on a year-to-year basis reflects that it does not follow a standard pattern however the trend line shows a steady rise over a longer period of time. In the year 2015, crime rose by 3% and in the next two years saw a decline of 23% in the year 2016 and 6% in the year 2017 respectively. Thereafter the crime pattern remained stagnant for one year i.e. 2018 and afterwards, it has been on a steady increase of 22% in the year 2019 and a further 12% in the year 2020. Even during the Covid-19 lockdowns, no downward trend in the street crime was observed. In the next three years i.e. 2021, 2022 and 2023 it saw a steady increase of 23%, 15% and 7% respectively. This reflects that despite digital interventions and a functional city surveillance system, there has not been any impact on the street crime.

5.2.1. Interrupted Time Series Analysis of Crime Data:

A detailed comparative analysis of street crime data of both cities i.e. Lahore and Karachi reflects that in both cities there has been a rise in street crime. Details are given below

Figure 3

Interrupted Time Series Analysis of Street Crime in Lahore and Karachi
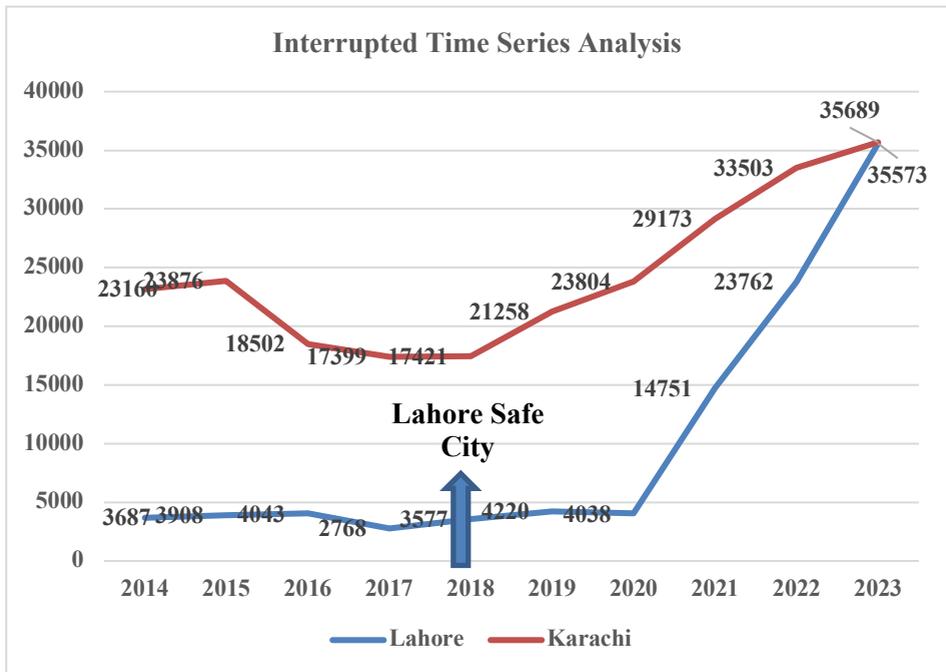
Once observed minutely, it is evident that crime in Lahore has increased by tremendous proportions as compared to Karachi. The Safe City project was

launched in Lahore in year 2018 but it had no impact on street crime. Despite Covid-19 lockdowns and restrictions in 2019 and 2020, there was no impact on street crime in Karachi whereas in Lahore in year 2020 it had a minor dip of only 4%. Interestingly, from year 2019 onwards, despite a functional Safe City project, the crime in Lahore rose by tremendous proportions and went from a total annual crime of 4220 cases in the year 2019 to 35573 cases in the year 2023 i.e. increasing by almost nine times in the last five years.

To understand this phenomenon of abnormal rise in reported crime, the concept of reported crime and registered crime needs to be understood. Since the performance of police is judged by the comparative annual crime statistics hence in most cases police is reluctant in registering crimes; especially the crime against property even if it is reported to them (Faheem, 2024). So, the figures which have been reflected above are not true reflections of actual crime taking place in the cities but these are showing the crimes registered by police. Non-registration of FIR continues to be the biggest complaint against police. (Faheem, 2024)

5.3. SWOT Analysis of the Lahore Safe City Project

1. **Strengths:** The Lahore Safe City Project utilizes advanced technologies such as Facial Recognition (FR), Automated Number Plate Recognition (ANPR), and AI-driven tools. It operates with 1,800 km optic fiber network, enabling data handling and offering potential revenue generation. The project employs highly trained IT professionals and serves as an integrated platform for police services, including emergency calls, investigations, and evidence management. Its enhanced surveillance capabilities have significantly contributed to crime control and law enforcement in Lahore. Additionally, PSCA has legal authority, making its evidence admissible in courts.

2. **Weaknesses:** The project faces high maintenance costs and relies heavily on the political will for sustained funding. Coordination with Lahore Police and the Traffic Police has been limited, hindering its full potential. Dependence on Huawei for hardware and software maintenance creates vulnerability, and the system's coverage area needs to be expanded as the city grows. Furthermore, there is limited in-house expertise for system maintenance and upgrades.

3. **Opportunities:** The Safe City model has the potential for replication across Punjab, and the integration of private and public surveillance systems could expand its reach. International collaboration offers an opportunity for PSCA to enhance its operations by learning from global

best practices. Community engagement and the expansion of AI-based operations, such as e-challan systems, could further improve efficiency and public participation.

4. **Threats:** Cyberattacks pose a growing risk as Safe City projects expand. Resource constraints, especially in maintaining and upgrading the system, are a major challenge. Bureaucratic hurdles could stifle innovation, and the contractual nature of PSCA's workforce affects long-term retention. Lastly, rapid technological advancements mean that the current system may become obsolete within a few years, requiring constant investment in updates.

5.4. Why Safe City Lahore has not obtained its Full Potential:

The Lahore Safe City project has faced several challenges that have hindered it from reaching its full potential. One major issue is the repair and maintenance of the system, as conflicts with Huawei, the project's main vendor, led to prolonged outages. At one point, thousands of cameras were non-functional, significantly reducing the project's effectiveness.

Another problem is the lack of coordination between the Lahore Police, City Traffic Police, and PSCA. Despite their shared goal of policing, communication gaps have resulted in underutilization of the system's capabilities, particularly in gathering digital evidence for crime investigations.

Rapid urban expansion has also contributed to the project's limitations, with many newly developed areas lacking camera coverage. Although PSCA has added more cameras, the process is slow and needs prioritization.

The absence of advanced data analytics and predictive policing tools has been a critical shortcoming. The original plan included AI-driven tools to analyze crime patterns and support proactive policing, but these have not been implemented. Additionally, the project lacks in-house capacity for system upgrades and AI tool development, which has left it reliant on external vendors. This problem is exacerbated by the limited career prospects for Police Communication Officers, resulting in high turnover and underutilization of existing talent.

5.5. Key Findings:

The aforementioned discussion and analysis bring out the following key findings:

- The street crime in Lahore and Karachi is on the rise, especially in the last three years it has risen consistently.

- The street crime in Lahore has not reduced even after the establishment of the Safe City project.

- The evidence provided by Safe City to Lahore Police for tracing criminals involved in street crime varies between 5% to 14% of total cases of street crime. This ratio is very low and it is also declining gradually hence it has not translated into reduction in crime.

- Safe City Lahore has not expanded at the same pace with which Lahore city has developed, hence more and more populated areas are emerging without coverage.

- The tedious processes and procedures at Safe City are one of the factors causing inconvenience for the investigation officers. Hence, they are reluctant to visit Safe City to obtain evidence.

- Due to issues with Huawei regarding the maintenance and replacement of cameras, around 3000 cameras are offline which is a huge number. These non-functional CCTV cameras are one of the key reasons resulting in the loss of valuable evidence.

Karachi police is using multiple piecemeal technologies to control crime which are not part of any integrated system and hence not coherent enough to produce tangible results.

6. Conclusion

Safe City project is an important technological intervention made by the government for the prevention and detection of crime. Its multifaceted and state-of-the-art technologies have proved to be an effective tool in ensuring the safety and security of citizens across the globe. However, due to multiple challenges, this innovative experiment in Pakistan has not been as effective as it was expected to be. The primary reason behind the sub-optimal performance of Safe City is the lack of integration with operational and investigation police which is evident from the limited number of cases in which evidence has been delivered to the police.

In addition, the Safe City project has faced multiple internal challenges including repair and maintenance issues, outages of cameras, service structure of employees and lack of funding for expansion, to name a few. Expansion of Lahore city in abnormal proportions without urban planning has also rendered the Safe City project partially ineffective as more and more areas are now being developed without surveillance cover. This urban expansion model is not sustainable.

A Safe City project in Karachi can be an effective intervention provided that the lessons learnt by the Lahore Safe City project are understood and taken care of. A detailed plan covering all the loopholes and weaknesses will be required to make the Safe City at Karachi viable and effective. A dedicated effort aimed at transforming the culture of police organizations will also be needed to make Safe City a success story. It's ultimately the end user who has to make a project successful by effectively utilizing the facility

7. Recommendations

1. **Resolution of Issues in Repair & Maintenance of the System.** PSCA should take immediate steps to resolve issues in the repair and maintenance contract which has resulted in an outage of more than 3000 cameras. This may include engaging new contractors through a framework contract, replacement of damaged equipment and optic fibre network. PSCA may also consider leasing extra loops of optical fibre to private vendors through a Public Private Partnership mode for creating a sustainable source of income. Building in-house capacity to deal with routine and recurring issues is also critically important for long term sustainability of the project.

2. **Addressing the Issues Faced by IOs in Obtaining Data.** PSCA should immediately redefine the business processes for obtaining data so that these are convenient for the IOs. A system of online applications should also be introduced whereby an IO can submit the request for obtaining evidence without physically visiting the Safe City. Use of mobile phones in non-restricted areas may be allowed to IOs so that they can stay in touch with their police stations and work on other cases simultaneously. Provision of evidence through email and WhatsApp on verified accounts may also be considered. A better coordination and increased reliance of IOs on Safe City is the key to operational success.

3. **Catering the Growing Urbanisation Resulting in Less Coverage.** PSCA in consultation with LDA should make an extension plan whereby it can cover vital areas which are being newly developed. A public-private partnership model can also be considered with newly developed housing societies whereby they can be asked to contribute a share of expenses incurred on installing new cameras. The societies can benefit from this initiative in the form of a live surveillance facility being offered by the PSCA. Integration of private cameras installed by housing societies with the Safe City can also help to bridge the gap.

4. **Use of AI and Data Analytics for Predictive & Proactive Policing.** PSCA should engage experts from the market for data analytics and developing

AI-based tools. There is a dire need to expand these initiatives in the practical policing field so that the safety and security of citizens can be ensured. Only then PSCA can venture into predictive and proactive policing whereby vulnerable spots can be specifically identified and made secure through adequate deployment of resources.

5. **Improved Coordination with Lahore Police & CTP.** This is the key component and one of the most critical aspects which has been identified through this research. There has to be an exceptional coordination between PSCA and Lahore Police and the culture of working in silos must end. Every case reported to the police must be followed up by PSCA and evidence shared with the relevant police station. Such exercise must not be restricted to high-profile cases only. The untapped potential of highly skilled HR of Safe City and available digital technologies can only be put to just use if there is adequate coordination between the police and PSCA.

6. **Lessons for Karachi Police.** The Karachi Police has a chance to learn from the shortfalls of the Lahore Safe City project and make a more comprehensive, sustainable and dynamic project plan which may not suffer from the anomalies which the Lahore Police has faced. The issues in the long-term sustainability of the project involving funding, maintenance and software upgrade/ technical support and expansion need to be given due consideration at the planning stage. Another key lesson from the Lahore Safe City project is the change management in the behaviour and working of IOs. There must be training of IOs to let them know about the true potential of the Safe City project and create a demand for obtaining evidence. As evident from Lahore's experience, if the processes for obtaining evidence are cumbersome, and the IOs don't show up, the entire system with all its modern technologies can be rendered ineffective. Hence, there is a great opportunity to make full use of modern technology and truly begin a new police culture.

8. References

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