TECHNOLOGY ADOPTION IN ISLAMABAD POLICE

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ABSTRACT

Police reforms have been a contentious issue in Pakistan, where a series of efforts to transform the image of the police have not yielded the desired results. In this regard, a new effort is underway in the Islamabad Police, with core and non-core policing tasks being separated and management information systems being implemented. The purpose of this research is to identify the challenges that the Islamabad Police face in implementing these changes with their current skill set. Moreover, the study also analyzes public feedback regarding the quality of service delivery with the help of the aforementioned systems. In-depth interviews have been conducted with members of the general public and officials, including front desk operators and senior officers. The analysis was carried out through reflexive thematic analysis. Different themes about the Management Information Systems (MIS) were identified through the reflexive thematic analysis; pertaining to the infrastructure landscape, human resources, software support, and perceived differences between conventional and MIS-based systems. Our research has found that the digitalization of the police has produced positive results, including enhanced transparency, accountability, and public satisfaction. Despite its overwhelming advantages, the pace of technology adoption is not proceeding at the desired rate owing to multiple impediments. These include non-congruence with legal systems, a lack of institutional priority, inherent cultural biases, and the threat of cyberattacks. We recommend legal reforms for incorporating digital data as evidence in courts, making digitalization a command priority by including it as Key Performance Indicators for officials at each tier, establishing a comprehensive nationwide digital criminal database, and shifting from the internet to an integral safe city-based intranet to enhance system availability and protection.

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MIS	Management information Systems
IP	Islamabad Police
ICT	Information and Communication Technology
PRMS	Police Station Record Management System
CRMS	Criminal Record Management System
CMS	Complaint Management System
IT	Information Technology
PITB	Punjab Information Technology Board
IG	Inspector General

INTRODUCTION

Effective policing is a critical state function for maintaining law and order and providing services to citizens. Pakistan inherited a legacy policing system from the British that was primarily a colonizing tool with little emphasis on service delivery. Consequently, police stations became symbols of corruption and malpractice, and the much vilified Thana culture kept normal citizens away from police stations. There have been many attempts towards police reforms, with a major effort carried through the Police Order promulgated in 2002, which aimed to create a professional, service-oriented, and accountable force to prevent and detect crime as well as maintain public order. Despite the novelty of the reforms, this act has so far failed to achieve the desired impact. In order to enhance its capacity, introduce meritocracy and transparency, various technologies and softwares are being introduced in the police force in order to transform the police stations into effective service delivery stations for the citizens. These technologies and Management Information Systems (MIS) were first implemented in the Punjab Police and are now being replicated in the Islamabad Police (IP).

To rebrand its image and improve upon its service delivery, the Islamabad Police is separating core policing from non-core police work. Police stations are supposed to spearhead hard-core policing, i.e., prevention, investigation, and detection of crime; their capacity will be enhanced through automation, the upgrade of infrastructure and facilities, and the adoption of the latest gadgets and technologies. Non-core police work, such as citizen services, is handled by separate and dedicated facilities located outside of police stations. In order to facilitate the process, MIS is being incorporated into the system for better transparency and service delivery. The online database management systems have been developed and monitored by the IT Division of IP and the Punjab Information Technology Board (PITB). These systems are used by all the stakeholders in the hierarchy, ranging from the Inspector General (IG) to the constable at each police station. This allows for better crime control and management, better investigation, effective detection of crime, better policy formulation, and better implementation. These MIS are functional in all 24 police stations in the Islamabad Capital Territory (ICT). The components of MIS are the Criminal Record Management System (CRMS), Police Station Record Management System (PRMS), and Complaint Management System (CMS). For non-core policing activities, seven facilitation centers have been established at various locations in ICT and provide different facilities, such as tenant registration, foreigner registration, character certificates, and e-challans.

International evidence suggests that despite the obvious advantages of technology adoption, its use in police work has produced mixed results (Yalcinkaya, 2007; Hale et al., 2004). On one end, the introduction of e-services and MIS can play a pivotal role in enhancing organizational capacity and streamlining procedures, thereby reducing the sludge effect (Al-Dari et al., 2020; Pang et al., 2014). On the flip side, the inertia of legacy equipment and procedures, the inherent fear of change, the non-availability of trained human resources, and user acceptability emerge as the biggest challenges to the introduction of e-services and MIS (Al-Zaabi, 2013). If not addressed properly, these impediments can actually increase the sludge effect rather than decrease it. It has been well established that technological tools are likely to fail miserably without a deeper understanding of culture, society, governance, and economics. Due to the above-mentioned challenges, sometimes technology offers suboptimal results in improving organizational capacity. Despite the novelty of the aforementioned IP initiatives, a lack of user acceptance and a slow commitment to change can lead to inefficient resource utilization (Ellahi& Manarvi, 2010).

As a result, it is necessary to identify the barriers to the implementation of MIS in police stations that use ICT as well as develop a better implementation plan. Moreover, this study focuses on the quality of public service provision. This study is primarily related to police stations in Islamabad; however, future studies can analyze police organizations in the other provinces of Pakistan and look for the diversity and commonalities across the country.

Objective: To identify the issues and challenges in technology adoption, faced by the Islamabad Police.

Sub-Objective: To examine the perceptions of stakeholders (police officials[1] and the public) about the role of information management systems in enhancing the capacity of the Islamabad police.

LITERATURE REVIEW

A typical MIS is supposed to provide technology-enabled information management solutions; however, in the public sector, an additional challenge is the presence of various concomitant factors that may impair MIS performance. For instance, it identifies problems in economies, such as poverty and crime, in addition to making an attempt to deliver public goods and services to solve them. It is also significantly affected by bureaucratic red tape and politics, all of which make the introduction of management systems far more difficult than they would be in the private sector (Caudle et al., 1991).

Despite its complicated nature, MIS in the public sector remains highly significant because of the numerous issues it can resolve. Some of these problems include the integration of different technologies, the integration of specific planning (such as, a particular department's resource planning) with an organisation's overall planning procedure, the development of systematic procedures to identify and prioritise information requirements, and the enhancement of application development and maintenance (Caudle et al., 1991).

2.1. MIS in Public Sector Organizations

Digitization has shown mixed results in public sector organizations, and it has usually witnessed initial friction from its users (Hale et al., 2004; Pang et al., 2014; Yalcinkaya, 2007). However, after its acceptance, organizations have seen significantly enhanced output (Dari et al., 2020). The determinants of the success of MIS include the support of top management, the involvement of end-users, input from information technology organizations, and pre-testing of MIS (Al-Zaabi et al., 2013). Due to the aforesaid factors, technology may be beneficial as well as harmful for different organizations—the two aspects that this literature will henceforth discuss (Ellahi & Manarvi, 2010). Explicating the above factors, it is crucial to secure professional help from external sources, such as vendor support and a user steering committee, and increase user participation during the MIS's gestation period (Sumner, 1999).

The literature is more pronounced on the factors leading to the failure of MIS; as compared to factors influencing the successful implementation of MIS. While substandard technical methods may have been previously understood as one of the primary causes, they are now of relatively lesser significance. The more pertinent issues may include inadequate specification of requirements, ineffective communication and leadership, insufficient resources, poor objectives, inadequate size of projects, ineffective management, a lack of planning and control, and personality clashes (Sumner, 1999).

It is interesting to note that despite considerable research on the reasons for the failure of MIS, however, the success rate of MIS is not impressive. Interestingly, the more capital-intensive the development, the greater the chances of its failure. Approximately 20 to 30 percent of all such initiatives result in complete failure, whereby projects are entirely abandoned, and 30 to 60 percent result in partial failure, whereby projects encounter cost and time overruns, among other issues. The implementation of MIS in the public sector is especially difficult, having the lowest success rate compared to other sectors, such as retail, financial, and manufacturing. This could also be due to the

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[1] Officials include Front Desk Operators and Senior Officers.

scale of operations in the public sector; the larger the project, the greater the likelihood of failure (Goldfinch, 2007).

The primary issue with introducing MIS may simply be the unrealistic and overstated expectations individuals have regarding it. After the introduction of such a project in a large-scale organization in the public sector, it becomes fairly difficult to supervise and control—which are one of the two key factors that are important for its survival and success. The public sector additionally faces considerably higher challenges because, in the event of failure, it is difficult to hold individuals accountable, which is why investments should be made with modest aims and in proven technologies in the public sector (Goldfinch, 2007).

2.2. Role of Information Technology in Police

The institution of police has changed and developed over time. It has gradually progressed from little or no technological consumption to significant technological innovations in routine procedures, which can be broadly classified into two types: information-based technology (soft technology) and material-based technology (hard technology) (Byrne & Marx, 2011). Technical innovations in police departments may also be referred to as "E-policing," defined as the exchange of information and services between the police and citizens via the internet (Escalona, 2020).

The evolution of information technology and its adaptation have considerably changed the behavior and attitude of the police. Recent innovations such as speech recognition, social media policing, facial recognition, fingerprints, biometrics, and crime mapping have accelerated their productivity, effectiveness, and competence (Fatih & Bekir, 2015). Considering the significant advantages of information technology in terms of enhancing the problem-solving skills of police officials, most of the literature thus advocates that its impact is primarily positive (Brown & Brudney, 2003).

The nature of these technical innovations is such that they can potentially change the organization of law-enforcement authorities in both developed and developing countries (Byrne & Marx, 2011). Since the technology used in policing aims to facilitate quality and efficiency in law enforcement operations, it not only improves perception but also the structure of traditional policing. Changes in both the aforementioned components thus lead to similar developments in police organization and management (Escalona, 2020). The introduction of different software and MIS in India, for example, allowed for the online redressal of public grievances, and thus assisted in developing a better relationship between the police and general public (Dutta, 2016; Tyagi & Dhar, 2017). The same theory also corroborates changes in the organization of police in developed countries such as the United States, where, after an assessment through different outcome measures, the introduction of technological innovations resulted in significant improvements among the police (Byrne & Marx, 2011).

In each of the aforesaid cases, technology can revolutionize the police sector by ensuring effective communication, intelligence gathering, traffic management, and administrative solutions (Byrne & Marx, 2011). Elaborating on the above, technical improvements additionally guarantee and increase transparency, efficiency, accuracy, and accountability among routine tasks related to law enforcement, such as registration of cases, data storage, and investigating and solving crimes (Dutta, 2016). All of the above, ultimately lead to significant benefits for police officials in the investigation process (Tyagi & Dhar, 2017).

Given the significance of technology, it has been referred to as the "lifeblood of police" (Yalcinkaya, 2007). Most law enforcement agencies therefore support police officers by incorporating information technology into routine tasks, due to the immensity of information they receive at every stage of the law enforcement process, including allocating resources, patrolling, preventing crime, solving crime, tracking criminals, and hot pursuits (Gottschalk, 2006). Information technology, thus,

considerably influences the practices and performance of police, as elaborated above. In fact, the greater the acceptance of technology among police officers, the higher the quality and performance of policing and law enforcement agencies (Colvin & Goh, 2005; Gottschalk & Holgersson, 2006). It is therefore all the more important to understand the scope, as well as the limitations of information technology.

With information technology, it is not just its usage but the extent of it that truly determines its performance. In order to promote that, researchers have developed specialized mechanisms, such as the E-Governance model of administration for law enforcement authorities, the introduction of which also enhances knowledge sharing among law enforcement agents. This may be done through formal MIS or informal interactive mobile applications; both make the sharing of knowledge considerably more efficient (Tyagi & Dhar, 2017).

Information system methodologies developed in the past were unsystematic, which made them extremely complicated in a dynamic environment. More recently, the technological innovations and systems adopted have been more disciplined and structured. They thus break down the management and development process into rational and credible steps, increase control and transparency of the development process, decrease uncertainty and risk, provide clear and measurable objectives, and standardize the management and development process. Structured innovations can thus increase quality and productivity as resource requirements can be forecasted and obtained upon demand (Fitzgerald, 1998). Organizations thus readily adopt management systems in hopes of increasing their productivity (Mohan & Ahlemann, 2013). Organizational adoption of information system management and consistent use by the staff are, however, two very different aspects. Only a minority of organizations are able to develop and execute a system that the end-users find useful. The use of these systems is also significantly inconsistent because of their perceived impracticality; the practical usefulness of information system methodologies thus remains highly controversial despite their considerable benefits and resource-intensive nature. This is primarily because information management systems are not parallel to the needs of end-users, which forces the latter to reject those (Mohan & Ahlemann, 2013).

Even though much of the literature reiterates the transformative power of innovations in technology, some studies question the extent of those developments, stating that technological innovations only have a limited effect on the quality of police services. This problem may only exist because the nexus between technology and improvements in police departments is difficult to analyze (Byrne & Marx, 2011). Nevertheless, certain limitations and complications prevail in the process of technological developments and innovations (Escalona, 2020; Rossler, 2019). These include the reluctance of police officers to use updated technology, inadequate training programs, and unsatisfactory infrastructure facilities at police stations (Dutta, 2016). For instance, the law enforcement agencies in the Philippines faced difficulties adjusting to e-policing due to a lack of training and technical support. The transition from traditional to modern policing is thus challenging for personnel due to the time-consuming learning process involved (Escalona, 2020). In developing countries, it is also difficult to balance the expensive and resource-intensive nature of technological advancements with the police department's limited budget (Dutta, 2016).

Information technology is, nevertheless, advancing with momentum through different forms and features including advanced analytics, computerized records storage, and visual and audio technology. It may be difficult to adapt to in some parts of the world where income is low, internet connections are inefficient, and online illiteracy or inaccessibility exists (Escalona, 2020).

2.3. Public's Perceptions about MIS Used by Police

One of the key features necessary to realize the effectiveness of MIS is the customer usage (Joshi, 2005). E-policing primarily aims to encourage greater public participation in crime prevention

within their communities, which has significant advantages in service delivery, including joint identification of problems, increased interactions between law enforcement authorities and the general public, and increased trust of citizens in the police (Escalona, 2020).

Injustices, inequalities, and hidden bias, however, are some of the adverse outcomes related to artificial intelligence that harm the relationship between the police and general public (Harris & Burke, 2021). Studying the perceptions of citizens about the use of body-worn cameras in Washington, D.C., Wright & Headley (2021) revealed that while it may possibly improve the behavior and attitude of officers and increase the validity of constables, it is unlikely to promote community trust. Behavioral dynamics that may shape public perceptions about the information technology are particularly important. The resistance or acceptance of consumers to technology depends on factors including conflicts and politics among users, the quality of the process of implementation, user participation, ease of use, the usefulness of an information system, and personal evaluation of the impact of technology on user equity (Joshi, 2005). Zambia, for example, has struggled with inefficiency in its transition to e-policing for improved case analysis because primary stakeholders, including the general public, find it difficult to contact authorities through mobile technology, even though most of them have access to mobile phones and/or mobile terminals (Escalona, 2020).

2.4. Police Reforms; International Best Practices

In recent times, the role of law enforcement agencies has changed in many countries in accordance with the developments in different societies, all the while preserving the original and primary role of constables. Perhaps the most important of these adaptations has been the introduction of technologies and the implementation of information systems in order to enhance the performance of the police (Fox, 2019).

One study found that the use of various technological advancements among law enforcement agencies in the Netherlands is not always satisfactory for the public. Instead, there is a consensus among them to increase the use of technologies that already exist. It follows that the legal foundation and scope of technological competencies in police are frequently ambiguous, and funding, expertise, and experience are occasionally limited. In addition to that, due to the absence of assessments and critical analyses, the learning cycle is rarely completed (Custers & Vergouw, 2015).

At the same time, however, innovations in policing have been highly successful in other developed countries. The success of the mobile technology acceptance model (M-TAM) among constables in the United Kingdom has proved to be promising. Another study propagates the use of MIS, a survey conducted among 506 Australian police officers concluded that 72 percent of them were satisfied and believed that information technology not only improved the police work but also allowed for the adoption of a more problem oriented approach (Chan, 2001).

Although well-established among developed countries, the concept of an e-police system remains relatively new among developing countries, which can also take advantage of the opportunities that come with the introduction and implementation of technological advancements. There is some evidence reported in literature that incorporating technology into the police system of Bangladesh will make it highly efficient and effective in terms of the country's law and order situation (Mollah et al., 2012). The use of technology in routine law enforcement procedures in Bangladesh, however, remains scarce. For instance, even though forensic science developments have radically transformed police investigative tactics across the world, the degree of forensic awareness and understanding of many criminal forensic advancements in Bangladesh remains low. In fact, fingerprints and DNA evidence are rarely obtained and used, except in high profile cases (Kashem, 2017).

Advocating the aforesaid, the literature elaborates that, as a developing nation, Bangladesh has struggled to implement information and e-governance in its public sector. These limited

technological advancements in the country may be due to scarce formal sources of information flow and access, as well as low literacy rates that pose significant hurdles for the utilization of non-interpersonal sources and channels. In addition to the above, limited expertise and negative organizational values established among participants also impede the growth of Bangladesh's technological revolution (Hossain, 2022; Sarker et al., 2019).

Despite the difficulties countries face in establishing e-governance, it nevertheless maintains its significance in alleviating corruption and, especially, strengthening the connection between citizens and government. The implementation of technological advancements among constables in Ethiopia and Fiji, for example, advocates the aforementioned nexus between e-governance and corruption, as well as that between e-governance and public services (Pathak et al., 2007). Information and communications technology are, similarly, being consumed by the Malaysian public sector to improve governance quality, particularly in terms of providing decent customer services, and generating customer satisfaction. E-governance in East and Southeast Asia, however, is extremely different as it highlights the strengths and limitations of countries instead of their ability to make policy changes (Holliday, 2002).

In India, the recent shift towards transparency and accountability in police operations due to technology has apparently increased the workload of constables. Alongside this, however, this very change has helped them earn the public's trust by improving the efficiency and effectiveness with which law and order are maintained in societies (Kumar, 2012). This is made possible by modern technology's ability to provide actionable information such as evidence, place, and location of a crime in a timely manner (Sachdeva & Kumaraguru, 2015).Despite their significance, the advantages of technology in policing are not limited to the outcome of criminal activities. Along with more efficient crime detection, control, and impartial judgements, it improves the police force's qualifications, status, and organizational legitimacy (Kumar, 2012).

The aforementioned assertions may be justified through the following case, which evaluates the adoption of online social networks by the Indian police. The study concluded that implementing online social networks allows constables to engage with the public through different styles of communication—formal and polite—in order to address their problems. The public can thus more easily contact the relevant parties and departments with their complaints. Online social networks further provide the public with prospects for greater police accountability, which consequently leads to higher trust in constables (Sachdeva & Kumaraguru, 2015).

2.5. Research Gap

There is paucity of literature related to Pakistan about the potential of MIS and its perceptions from different stakeholders. Several studies based in Pakistan evaluate the police only with respect to corruption, legitimacy, gender issues, and procedural informality during the coronavirus, and deficiency of decent governance practices. Despite the importance of technology in mitigating corruption and improving governance in policing, the scope of these studies does not include its impact on the police in Pakistan (Ahmad, 2020; Imam, 2011; Jackson et al., 2014; Tankebe & Asif, 2016; Waseem, 2021).

There exists a limited amount of literature studying the cost-benefit analysis of online management systems in Pakistan's police sector. This research will thus aim to fill a gap in the literature by analyzing police attitudes and behavior towards the implementation of online management systems and their impact on crime detection, prevention, and investigation. In addition to that, this study will also analyze the public's perceptions of the MIS adopted by IP.

GENESIS OF POLICE DEVELOPMENT AND REFORMS IN PAKISTAN

Before researching the impact of technology on the IP, it is imperative to understand the basic workings of the IP and the various reforms undertaken in the past. This chapter enlists evolution from pre independence era to its present form. Subsequently, the basic police organization and working at Police station level have been discussed in detail. In the end, key takeaways from this chapter have been enlisted to set the stage for subsequent chapters.

3.1. Historical Background

Islamabad Police draws its origins from Pakistan Police which has its roots in British Indian Colonial Police system (Khosa, 2012)[2]. The history of the development of Pakistan Police and its reforms can be summarized in various eras as under:

Pre- independence Era. In the Mughal era, policing was done through "**Kotwals**", similar to the present day sheriff or police commissioner, who were responsible for maintaining law and order. Kotwals were typically local zamindars or landlords who were given authority by the state to perform policing duties in addition to other responsibilities (1). Initially, the British under the East India Company continued with the Mughal System, which was abolished after the commencement of the British Raj. The Police Act was passed in 1861, and the Police Force was organized along military lines. The modern police force concept was introduced by Sir Charles Napier, who constituted a separate police force emulating the concept of the Irish Constabulary and implemented it in Sind Province. The same concept was later implemented in the entire sub-continent through the Police Act of 1861. The Act was designed as a colonial era tool to control and subdue the local population, with no provision to cater to the aspirations of the local population.

Early Years - Post Independence (1947-1958). On gaining independence, Pakistan inherited a robust policing system from the British based on the 1861 Police Act. Despite its inherent weaknesses, the policing system was devoid of corruption and provided a workable solution for the population. Recognizing the importance of policing and involving the local population in policing, one of the first decisions made by Quaid-e-Azam after independence was to approve a metropolitan policing system in Karachi modelled after the systems in Bombay and Madras. However, the proposed amendments could not materialize owing to the untimely death of the founder and resistance by an empowered bureaucracy. The only major change was formulation of one unit in which all the provinces of West Pakistan were amalgamated to form one province. Consequently, the police was also reconstituted as the West Pakistan Police, and it continued to operate under the 1861 Police Act.

Military Rule – 1958 -1971. In 1958, Field Marshal Ayub Khan abrogated the constitution and installed Martial Law. As Chief Marshal Law Administrator, he constituted the "Pakistan Police Commission" (1960-1961), under the chairmanship of Justice Constantine. The commission proposed that officers of low rank such as constables and head constables should not be allowed to investigate the case independently. It also proposed induction through the Provincial Police Service and the Subordinate Police Service. Throughout the Martial Law years, the bureaucracy remained supreme and effectively held all important sections of government, including the police, which created resentment in the populace. The police had to face a number of riots after 10 years of martial law and had to resort to strong-arm tactics to subdue the populace, thereby further depreciating its image. Under Yahya Khan, one unit was abolished and provincial police services were reconstituted. Overall, during the military years, the police continued to be run under the 1861 Act through civil servants, and no major reforms were carried out.

Bhutto 1972-1977. After dismemberment of Pakistan, Zulfikar Ali Bhutto took over West Pakistan. During these years, two new forces FIA and FSF were constituted. The Federal Investigating Agency (FIA) was formulated along the lines of the US Federal Bureau of Investigation (FBI), while the

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[2] Same reference is applicable for the entire section 3.1.

Federal Security Force (FSF) was modelled on the Indian Central Reserve Police Force (3). The politicization of the police force commenced at this time as it was freed from civil bureaucracy and was used as a political tool. Federal Security Force (FSF) was formed with the only aim to terrorize local population and prosecute dissidents. Meagre pay and undue political interference remained active during these years. In 1972, a report on police organization and reforms was submitted to the government of Pakistan. As a result of the recommendations, an occupational police group was created, which allowed lateral entry into the police force. A number of Army officers were inducted into the police force, and many laymen were directly taken on as Deputy Superintendent of Police (DSP) without taking public service exams. This low quality induction resulted in further deterioration of police standards.

Zia Years (1977- 1988). General Zia Ul Haq time in office witnessed a turbulent time in the country's history. The Iranian revolution and Soviet invasion of Afghanistan saw the rise of sectarian strife and the patronage of militants. During this time, the FSF was disbanded, and all DSPs hired through malpractice were terminated. In 1978, J. Giles, a British expert, gave a report on police reforms. In his report, he argued for better career enhancement and advancement opportunities in the police rank structure to attract intelligent and well-educated young men to the police. He also recommended the development of "scene of crime" experts and abolishing recruitment at supervisory level after 10 years. However, the recommendations were not incorporated due to internal and international turmoil and unrest.

Democracy Experiment (1988-1999). The political interference in police force reached its zenith during these years. The police were used as a political tool to prosecute and terrorize opponents. The police officers who pandered to the illegal demands of politicians and resorted to sycophancy could only survive in office. A large number of honest police officers were removed from their jobs and placed on special duty for refusing to obey illegal political orders. The establishment of depoliticized, honest, and professional Motorway Police was a significant achievement of the era that quickly gained public acclaim.

Musharraf Years 1999- 2008. The major reform undertaken during this tenure was the introduction of the Police Order of 2002, which abolished the colonial 1861 Act and introduced a new system that corresponded to modern policing requirements and improved upon the professionalism, integrity, and accountability of the police force. Various bodies like Public Safety Commissions at national, provincial, and district levels, the Police Complaint Authority, the National Police Management Board, and Citizen Liaison Committees were introduced to make a professional, effective, and people-friendly police force. It provided financial and administrative autonomy to police authorities, ensured security of tenure for key appointments, and encouraged continuous growth and learning from best practices across the globe to transform it from a people-frightening to a people-friendly force. The much-vaunted Thana culture was to be abolished to create a conducive, people-friendly environment at police stations. Despite the novelty of the idea, political expediency prevented its implementation, and amendments were issued in 2004 and 2005, draining the initiative's true essence.

3.2. The Present Era

The return of democracy has witnessed further impediments to implementation of Police reforms. Sindh and Balochistan governments have repealed Police order 2002 and reinstated 1861 Police Act. The KP Government has also repealed the 2002 Police Order and introduced its own version of the Police Act 2017, which is largely based on the Police Order 2002. It has further introduced a novel legislative scheme that distinguishes between the provincial legislative scheme and the federal legislative scheme. Punjab is the only province that has retained the 2002 police order, albeit with certain amendments. The police order of 2002 has not been implemented in Islamabad, and the federal government is hesitant to introduce the same in the capital.

Existing Police System in Pakistan. The police in each province have a huge organizational and structural overlay that starts at the IG and culminates at the constable. Police structural and organizational changes are a continuous process, with changes incorporated on a regular basis. Recently, the Police Reform Committee (PRC) was constituted on orders of the Supreme Court of Pakistan, which has given some recommendations regarding the restructuring of the police, which are being implemented.

Erstwhile Provincial Police Organization. The police system in Pakistan is a hierarchal system commanded by the IG of a province. Each district has a district police officer of the rank of Senior Superintendent of Police (SSP). The district is divided into 3–4 sub-divisions commanded by an Assistant Superintendent of Police (ASP) or Deputy Superintendent of Police (DSP). In each sub-division, there are 2-3 police stations, each commanded by a SHO of the rank of an inspector, assisted by an Assistant Sub-Inspector (ASI) and constables. SHO is the lynchpin of each police station, and the number of police stations increases as per population. On the upper echelon, 2-3 districts are joined to form a sub-division, which is commanded by a DIG, all of which operate under an IG of police. Punjab is divided into 8 sub-divisions, while Sindh has 3 sub-divisions (Shigri, 2018).

Issues of Urban Policing. In the colonial era, most of the population resided in rural areas, which have been transformed in recent years. In the archaic police system based on the 1861 Act, the emphasis was on rural policing, and the police stations were correspondingly constituted with the SHO as the kingpin. The existing system was unable to meet the requirements of urban policing, where higher population density and a better informed and educated populace in a smaller area created their own issues. The problem was solved by increasing the number of police stations, which has so far failed to produce the desired results.

Restructured Urban Police Organization. In order to address the issue, 10 major urban areas were identified as having population greater than 1.0 million (Shigri, 2018)[3]. The PRC recommended a police organization at each of these urban areas with Additional IG or DIG in charge (appointed as Capital City Police Officer (CCPO) or City Police Officer (CPO)) with various wings under its command each commanded by a DIG or SSP. The emphasis is on constitution of a force dedicated to a specialized task. Several new wings namely administrative, traffic, operations, law and order, investigation, security, communication relation, and IT were created.

3.3. Police Station Reforms

The police station is the basic unit of the police organization and also its public interface. In the policing through the 1861 Act, police stations were constituted for rural settings in which the SHO was the kingpin controlling all the affairs within the police station (Shigri, 2018). This setting had serious issues in urban areas, where it failed to meet the expectations of a well-informed and educated population in densely populated areas. The initial attempts to resolve the issue by increasing the number of police stations have not produced the desired results. To address the issue, the Police Reforms Committee (PRC) recommended in its report the formation of a Police Division with various specialized wings, supplemented by technological apps to facilitate police work. Each police division would be formed through the amalgamation of 2–3 old police stations under the command of a Superintendent of Police (SP) to look after a population of 250,000–500,000 people. With these reforms, the 88 police stations in Lahore were reduced to 25 police divisions. The urban police station was divided into various sections such as administration, operations, investigation, law and order, and community relations, each under the command of an ASP or DSP.

3.4. Record-Keeping Mechanism of Islamabad Police

Islamabad Police comprises 24 police stations looking after the complete Areas of Responsibility

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[3] The reference is applicable for the entire section 3.2.3

(AOR) of the federal capital. As previously stated, the police have so far resisted the implementation of Police Order 2002 and are still operating under the 1861 Act (Shigri, 2018). The force is commanded by the IG Police and is undergoing a major structural change as per the recommendations of the PRC. The complete data base was stored on registers, and 26 registers were maintained in each police station. With the restructuring, a massive digitization campaign is also being pursued, in which the data base is saved on various MIS softwares. Each police station has a total of 25 registers, including first information report book (No. 1), the station diary (No. 2), the register of absconders and deserters (No. 4), the register of correspondence (No. 5), and many others (Mahar, n.d.).

3.5. Key Lessons

The analysis of above data gives few important takeaways which have been summarized in ensuing paragraphs:-

Hallmarks of 1861 Police Act. Since independence, Pakistan Police has been run through a 170 year old police act which was promulgated as a colonial tool to suppress dissent and deny local participation. The hall marks of policing through 1861 Act are as under:-

> (a) Anachronistic legal and institutional framework.
>
> (b) Arbitrary and whimsical management of police.
>
> (c) Politicized and controlled investigations.
>
> (d) Corruption and use of third degree.
>
> (e) Ineffectual accountability mechanism.
>
> (f) Severe under resourcing.
>
> (g) Poor professionalism
>
> (h) Adversial police- public relationship.

Over Indulgence of Politicians in Police. The police have invariably been utilized as a tool of oppression by politicians against their opponents. This overindulgence in policing by politicians is more pronounced during democratic years; however, military dictators have also used police as a tool for coercing politicians for their own benefit.

Ineffective Use of Technology. Despite repeated studies and experts recommendations, the police have not effectively utilized technology in their routine affairs. On the contrary, criminals have effectively utilized this facility and have thus far outsmarted police.

Police Order 2002. The Police Order of 2002 provides a comprehensive solution to all our policing problems. It is an inclusive law that can transform force from a colonial tool into a force functioning as an instrument of rule law, fulfilling the fundamental and democratic rights of the people. It ensures the de-politicization of the police force through the security of tenure for key appointments and by providing financial and administrative autonomy to IG police.

Impediments to Police Reforms. All efforts of police reforms have failed owing to lack of political will and inertia of bureaucratic snags. The present ruling elite (both political and bureaucracy) is the biggest impediment to police reforms as the police reforms would transform police from a People threatening force to a people friendly force which would impede their own vested interests.

Scope of Research. A police station is the basic structural unit and the public face of police dealing with the population. Therefore, while touching upon the top hierarchy, this study would confine itself mostly to police stations, as reforming a police station would transform its image among the

population.

Digitization of Record - Police Stations. In Islamabad police, a massive digitization campaign is in progress, wherein a complete database related to the routine functioning of police stations is being digitized through multiple management softwares.

Police Accountability. The police have an external accountability mechanism through courts or the federal ombudsman and also an intrinsic internal accountability mechanism. The major complaints against the police include failure to register cases, harassment, abuse of power, defective investigations, misapplication of law, and failure to submit evidence based challans. It is necessary to determine the role of technology in the internal accountability mechanism.

Role of Technology in Investigation. Technologies and digital data (for instance, Call Detail Records (CDR) and location data) can help us in prosecuting a criminal; however, the court of law (through Qanoon-e-Shahadat) does not accept MIS-based case evidence. The actual versus perceived efficacy of these softwares in facilitating routine police operations and investigation / prosecution of criminal cases must be assessed.

After functioning under an archaic police act of 1861 since independence, Pakistan Police has evolved in the past two decades since the promulgation of the 2002 Police Order. Although the system inertia and ruling elite have thus far resisted the implementation of police reforms in true spirit, things are moving in the right direction. The ground-level implementation of police reforms at the police station level would determine their success or failure. Police have begun to use various technologies and software to supplement its reforms; however, they must be properly integrated into the police system.

METHODOLOGY

The primary objective of this study is to examine the perspectives of stakeholders on management information systems. The stakeholders include police officials and the general public. The perspectives of the Islamabad police are incorporated through the lens of their experiences with the management information systems. The general public's perspectives are incorporated through the lens of their experiences with the filing of First Information Reports (FIR) and case follow-up.

The motivation to use the qualitative research methods is that the study is set under the research philosophy of "Social Constructivism (SC)". SC takes the stance that there is no fixed or single truth, but rather that there are multiple versions of truth and that reality is socially defined; therefore, there are no set hypotheses in this philosophy (unlike positivism).

4.1. Research Philosophy

The purpose of a normal scientific investigation is to explain a phenomenon in a way that is consistent with current scientific understanding. Here is where the majority of the effort is focused, as this is where the power of a scientific investigation rests. Research philosophy, as defined by Creswell (2013), is a combination of scientific intelligence and a human philosophical outlook that is utilized to describe complicated natural or social processes through the application of simplifying assumptions.

According to Saunders, Lewis, and Thornhill (2009) research philosophy, the development of new knowledge is the overarching goal. In this context, the term "worldview" refers to a set of beliefs that enables the researcher to take action based on one's perceptions about the nature of knowledge and the corresponding realities of the world. In other words, the research paradigm is a set of beliefs that enables the researcher to take action (Creswell, 2013).

Because it is impossible to explain the truth with one hundred percent accuracy, the associated paradigm adapts to reality with the assistance of some rationally justifiable assumptions about the underlying knowledge by employing judgement about the paths of consideration and the typical debates in the field that is being studied. This is done in order to accommodate the fact that it is impossible to explain the truth with 100 percent accuracy (Creswell, 2013). As a consequence of adopting this strategy, a researcher employs a research philosophy, the assumptions of which and the required research procedures of which are optimized to provide an explanation for a certain reality (Saunders, Lewis, and Thornhill, 2009).

Edmund Husserl (1859–1938) provided the philosophical foundation for the interpretive paradigm, often known as anti-positivist or constructivist (Lisboa, 2018). This school of thought holds that social life can be examined qualitatively through a variety of methods, including different methods, such as case studies, direct observation, and interviews (Neuman, 2011). This school of thought considers social reality to be subjective and socially produced, with researchers and participants engaging to interpret a phenomenon from an individual's perspective (Creswell, 2013; Guba & Lincoln, 1994). Under the interpretive paradigm, the study aims to answer one main question (about the experiences of the stakeholders about the MIS used by the Islamabad Police). An interview guide was developed in the light of relevant literature, initial-field visits, and expert-opinion. As typical modus-operandi of this approach (Qureshi et al., 2022), new questions were added that served as gateways to the subsequent phase of the analytic process.

An inductive approach has been followed for the current study. The findings from the sampled police officials are used as a guiding path for making generalizations about the entire Islamabad Police. Qualified generalizations can be drawn from the IDIs of the general public; there are diverse, uncontrollable correlates of public opinion (for instance, the type of crime encompassed by a particular FIR) about a complaint's lifecycle (ranging from registration to its resolution). By this, we mean that we can do a basic exploratory analysis of the IDIs of the general public.

Given that the study employs only one method of data collection, namely, IDIs, it falls under the purview of the mono-method data collection style. Data is cross-sectional; a particular respondent (either a police official or a member of the general public) has been interviewed within a fixed time horizon, i.e., between November 2022 and March 2023. A diagrammatic representation of the research philosophy is illustrated with the help of a research onion, given in Figure 1.

Figure 1: Research Onion for the Current Study
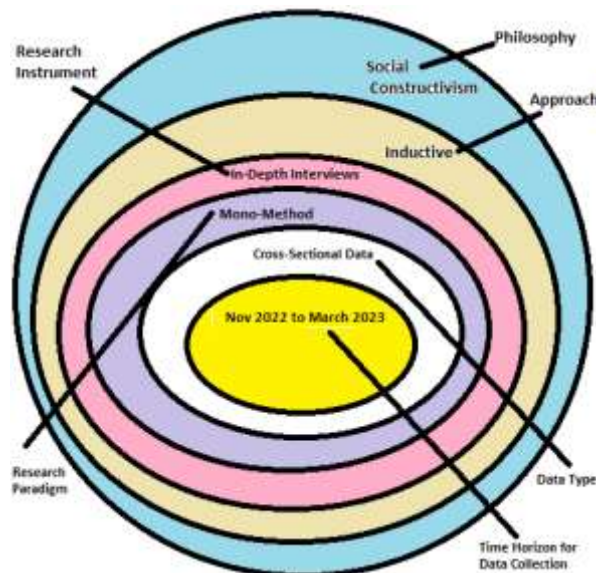
Researchers in the ambit of qualitative study designs, have proposed four main criterions for the aforementioned purpose: credibility, transferability, dependability, confirmability. To ensure trustworthiness and rigor all of these criterions were incorporated in the light of the guidelines of Lincoln and Guba (1985). An accessible and theoretically malleable method for analyzing qualitative data, reflexive thematic analysis allows researchers to quickly and easily isolate and examine overarching patterns and themes within a collection of data (Braun and Clarke 2012). Diagrammatic illustration is given in Figure 2.

Figure 2: Phases of Reflexive Thematic Analysis

Source: Braun & Clarke (2019).

4.2. Initial Field Visits: Pilot Testing

Initial field surveys were conducted to: derive an idea about the working of these systems, identify the focal persons who deal with the information systems.

Working of Information Management Systems. We conducted initial field visits; one of the aims was to understand the basic workings of the information management systems. During these field visits, we developed an understanding of the overall process for dealing with the MIS. This includes the following:

(a) Complainant's initial interaction with the police occurs through either of the three modes: (i) An emergency call at the Islamabad Police Helpline 15, (ii) online complaint registration through MIS, and (iii) an in-person visit to the police station for complaint-filing.

(b) Initiation of the FIR.

(c) The investigation procedure and two-pronged record-keeping: manual record-keeping, and digital record-keeping through Police Station Record Management Systems (PRMS).

Identification of Target Population. In general, MIS is used by all the officials in the hierarchy of Islamabad Police, such as Inspector General (IG), Deputy Inspector General (DIG), Superintendent of Police (SP), Station House Masters (SHOs), Station Clerk, and Constables. Nonetheless, the primary users of MIS are the Front Desk Operators (FDOs). Generally, two to three FDOs (including male and female) are appointed at each police station; in some instances, the number of FDOs is higher.

4.3. Sampling Design

Choice of appropriate sampling method is necessary to draw reliable generalizations from any study. Following research protocols were followed:

(a) Formal permission to conduct the interviews and field visits, was taken from the IG Islamabad Police.

(b) Ethical Approval for the study, was obtained from the Ethics Committee, School of Social Sciences and Humanities, National University of Sciences and Technology (NUST).

(c) Informed-consent was obtained from all the respondents.

(d) Respondents were informed that their data will only be used for research purposes; no micro-level details shall be shared unless anonymized.

Sampling Design for Police Officials. We used purposive sampling with following inclusion criteria:

(a) Active user of MIS (using it for at least last one year)

(b) Willing to participate in the study

We planned to conduct 20 to 30 IDIs of FDOs; however, the saturation-point was achieved, so we limited it to 21 IDIs. The proportion of officers to non-officers is based on proportional allocation. 33% of officers and 67% of lower-ranking officials were interviewed. Consequently, ten officers were interviewed for this study.

Sampling Design for Public. There is no sampling frame available that enumerates the details about the compliant filers with the Islamabad Police. Snowball sampling is appropriate in such scenarios because respondents provide leads about the next participant. Identification of eligible participants was decided on the basis of the following inclusion criteria:

(a) Age at least 18 years

(b) Have filed FIR with Islamabad Police during the last 18 months.

(c) Willing to participate in the study

A total of 11 respondents were interviewed for this study.

4.4. Research Instruments

The key informants of the current study are police officials and complainants who have filed a complaint with the Islamabad Police in the last 18 months. For both key informants, corresponding IDIs were used; field notes and memos were maintained. The interviews were carried out over a six-month period, from November 2022 to March 2023. The interviews of police officials were conducted at various police stations of Islamabad. Each Interview lasted for 30-45 minutes; average duration of an interview was 35 minutes. Depending on the participants' availability and preferred method, public interviews were performed both in-person and over the phone. Each public interview was completed in 10-20 minutes, with a 15-minute average time.

4.5. Transcription of Interviews

Key informants were allowed to express themselves in either of the two languages they are comfortable with: English or Urdu. Predominantly, the key informants of this study were well-versed in the Urdu language (vernacular Urdu was used by most of the key informants). To circumvent subjectivity, interviews were transcribed by professional transcribers, and validation was ensured by the authors of the current study.

4.6. Data Analysis

The authors processed the transcripts in collective meetings, where, after validation of the transcripts, initial codes were assigned to different statements. Coding is a continuous process; codes were merged and modified; consequently, the team agreed on a standardized coding structure. During the process of coding, disagreements were discussed and settled by mutual agreement. The authors collectively decided how and when to incorporate new themes and refinements into the coding structure. There were thematic memoranda and field notes maintained to describe,

summarize, and analyze the content of each theme.

FINDINGS AND DISCUSSION

To ensure the representativeness of the sample, a diverse set of FDOs were sampled. Diversity in terms of duty station and total experience was ensured; furthermore, the mean age and mean IT-related experience are 30 and 3.88 years, respectively. The gender distribution was determined in accordance with the fact that there is only one female police station in the Islamabad Police; roughly 14% were females, while the remaining were males. Similarly, a total of ten officers were included; one-third of them were female. The mean age and experience of officers were 39.6 and 14.6 years, respectively. Details are given in Table 1 and Table 2.

Table 1: Demographic Profile of FDOs

Respondent	Gender	Age	Edu	Experience (Years)	IT-Related Experience (Years)
FDO 1	Female	37	MSc	18	13
FDO 2	Female	38	BA	18	2.5
FDO 3	Female	26	BCom	7	7
FDO 4	Male	30	MA	8	5
FDO 5	Male	36	FA	15	3
FDO 6	Male	32	BA	7	3
FDO 7	Male	29	FSc	7	1
FDO 8	Male	38	FA	16	4
FDO 9	Male	32	BBA Hons.	8	2.5
FDO 10	Male	28	BSc	7	3
FDO 11	Male	33	BA	10	3
FDO 12	Male	27	BA	3	3
FDO 13	Male	24	ICS	5	2
FDO 14	Male	32	Matric	9	4
FDO 15	Male	24	BSc	3	3
FDO 16	Male	36	BA	15	5
FDO 17	Male	28	BA	7	3
FDO 18	Male	32	BA	8	5
FDO 19	Male	36	BA	18	5
FDO 20	Male	24	ICS	3	1.5
FDO 21	Male	25	MPhil	3	3

In this research, we inquired about issues and challenges faced by police officials in the adoption of MIS. The issues pointed out by the participants fall into four major themes: infrastructure landscape, human resources, software support, and conventional vis-à-vis MIS based systems; each of these is discussed in the ensuing paragraphs.

Table 2: Demographic Profile of Officers

Respondent	Gender	Age	Edu	Experience (Years)
Officer 1	Male	39	MPhil	18
Officer 2	Female	42	Bachelors	24
Officer 3	Male	50	LLB	22
Officer 4	Male	43	Bachelors	16

Officer 5	Female	31	MPhil	06
Officer 6	Female	38	MPhil	12
Officer 7	Male	42	MPhil	15
Officer 8	Male	45	MPhil	17
Officer 9	Male	32	Bachelors	06
Officer 10	Male	34	Masters	10

5.1. Infrastructure Landscape

In this theme, issues pertaining to the availability of necessary physical and digital infrastructure were grouped together. The major challenges faced by police officials were related to internet connectivity, the work environment, and digital infrastructure.

(a) Internet Connectivity. At present, the system is primarily operated on the internet, for which bandwidth is being requested from multiple internet service providers, which has its own issues. FDOs regularly complained about signal deterioration and connectivity issues. "The biggest problem we have is regarding the internet." (FDO 4). Due to security reasons, Mobile service disruptions on important events and holidays (Moharram, etc.) are the norm in Islamabad. In the absence of internet connectivity, the operations of FDOs are usually disrupted, and service is unavailable at these critical points. "Fridays are very sensitive, and the internet is normally not available around Jumma timings. Internet signals are also jammed on days when there are protests or threats of terrorist attacks." (FDO 1). In addition, due to bureaucratic snags, there is a delay in bill payment, which also disrupts system operations. "I think we were getting internet from Telenor or Ufone last year. Their bills were not paid in time by the department, so the companies used to disconnect the facility at times." (FDO 17) In some cases, FDOs end up using their own personal internet to connect with the internet. "We have been given an internet connection from the department. One VPN per police station is given to us. In case of problem, we connect our private internet from our mobile phones at times." (FDO 16)

During research, it was informed by the technical branch that an intranet based on fibre optics laid for the Safe City project in Islamabad can also be used for connectivity in 20 out of 24 Police stations; however, the same has not been utilized. There was a lack of awareness about this facility among FDOs, and some FDOs even suggested the availability of a separate intranet despite its availability. "Our police department should have its own separate internet facility. The benefit of having our own connection would be that we wouldn't have to wait long for technical support staff in case of any problem." (FDO 12) The FDOs who were knowledgeable about intranet facilities shifted to intranet in case of the non-availability of the internet. Consequently, they face issues connecting to the intranet and complain about its slow speed. "A safe city link was given to us earlier, but it was very slow. It takes a minute to proceed after each click. Apart from this, we also have an internet connection. Muhharars also keep a private device for connectivity." (FDO 6) Due to a lack of technical knowledge, some FDOs were asking for separate computers for the internet and intranet, which would waste resources. "We are given an intranet from these people. We have only one computer system in the police station, and it needs to be connected to the internet as well. So we should be given separate computers for both the internet and intranet." (FDO 13)

The problems of internet availability were asked from technical team officers, and they acknowledged that there are inherent issues and bureaucratic snags in the availability of the internet that cannot be addressed easily. In their opinion, intranet facilities are available for FDO, but they are relying on the internet only because it allows concurrent internet surfing and social media usage with office routine. Moreover, changing the system from intranet to intranet requires some technical expertise, and FDOs are unable to connect to the database as they fail to make the correct network settings. "The safe city intranet is accessible 24 hours a day, seven days a week." In case of any issue, we need to put the system back on track in 3 hours. If our safe city cameras installed in SHO's room

are working, it means there are no issues on our end. The problem is that FDOs prefer to work on the internet, where they can check emails and use other applications. When the internet is down for some reason, they revert back to the intranet but fail to connect it properly". (Officer 7)

(b) Work Environment. In most cases, there is no separate room available for FDOs, and they have to share work space with other staff, which causes issues with their work output. FDOs wanted a separate work space for their computer desk, and working in a chaotic police station was one of their major concerns. "My desk is in Muharrar's office, where wireless phones are also placed. There is so much chaos all the time. I need a little peace and quiet to focus on my work; otherwise, I am very likely to make typos and errors in FIRs." (FDO 20) Extended duty hours were a major concern for FDOs, and they regularly complained about the extended work hours and employment outside their mandated tasks. "I am on duty for all seven days of the week. My duty starts at eight, and I work till mid-night, sometimes beyond mid-night as well." (FDO 17) FDOs also complained that overworking also affected their work output. "We FDOs cannot work for twelve plus hours daily. Our work demands presence of mind, and there is no room for mistakes." (FDO 20)

(c) Digital Infrastructure. The majority of FDOs complained about antiquated systems that caused sluggish data entry. "Our front desk's computer system is an old model." The software on this system has not been updated." (FDO 15). Some FDOs insisted on the most recent i7 computers. "When multiple applications are running at the same time, the computer hangs." Core I7 processors are fairly widespread these days, and we must be provided with the most up-to-date machines." (FDO 12) Some FDOs admitted that they can work on legacy systems such as P4, however the minimum need is Core 2 DUO. "The software is designed to run on Pentium 4 systems; however, I believe a Core 2 DUO processor would suffice for data entry" (FDO 13). None of the officers commented on system hardware, indicating that the current computer systems are adequate for operations because no such issue was raised by FDOs to them.

Being the capital city with steady power arrangements available at most Police stations, this issue was not highlighted by most FDOs. "Our police station is the Model police station. We have solar panels as well as UPS for backup." (FDO 6). However, a few FDOs in remote areas did mention issues in this respect. "The duration of load shedding is longer in our police station as it falls into the rural zone. Power outages can occasionally last for two days." (FDO 15)

Presently, the forensic lab facility is available only in the Punjab Police, which is the only forensic lab in Pakistan. The samples from Islamabad Police are also sent to Punjab Police for forensics, which substantially delays the case investigations. Some of the officers demanded a separate forensic lab for the Islamabad Police. "Punjab Forensic Science Agency receives samples for forensic examination. The amount of bulk there has accumulated to the point that it takes four to five months to receive the forensic report for basic procedures." (Officer 1). The problem was not highlighted by FDOs being out of their purview.

5.2. Human Resources

Police authorities expressed their concerns about MIS training, the backlog, and the availability of technical experts, which are described below:

(a) Training. In human resources, we asked FDOs and officers about issues with training on the system. Before introducing the system, FDOs were selected based on their previous computer proficiency, which helped in its better integration. "I was unexpectedly named FDO. They questioned if I had any knowledge of computers. I was placed here since I was already dealing with computers. Following that, I received some brief training on software." (FDO 4). FDOs were quite proficient on data entry as the initial batches were given training sessions and subsequent batches were trained on the job. "The system has been given to us by Punjab Police, and a lot of training was given to us

initially" (FDO 1). The senior management was also informed that requisite training is imparted to FDOs prior to their employment as FDOs. "When management systems were implemented, we were trained on how to supervise and monitor FDOs." (Officer 2). Subsequently, already-trained individuals were asked to train newcomers through on-the-job training. "It is difficult for us to hold training sessions on a regular basis. So, we ask the previously trained personnel to mentor the newcomers." (Officer 6)

Some of the FDOs highlighted that the system is operating in Urdu, and they face issues operating computers in Urdu despite being educated in English. "The police language is Urdu, but we have learned everything in our formal schooling in English." (FDO 1). Officers acknowledged this issue and informed us that they trained FDO on the system before their employment at Police Stations. "The language of computers is different, so the boys were trained prior to their assignments." ………. "They received initial training, were introduced to computers and management systems, and were then transferred to police stations as front desk operators." (Officer 1)

(b) Backlog. A change in Job Description due to the reporting officer was a major concern for most FDOs. Initially, the FDOs were placed under the IT department, which administered their leave and duties; however, they were later transferred under Moharrars. This fresh arrangement has created issues as they are regularly being forced to perform routine policing duties other than their job description to compensate for a manpower deficiency. "I spend two days at the computer and the third day standing on a check post. When we were in the IT department, they would inquire about our whereabouts if we were not at our desks. Station clerks are now in charge of us. They have fewer Nafri (workers) at their disposal, so we are frequently sent to perform special duties." (FDO 11). Some FDOs informed us that Moharrars have resentment against them as FDOs operate in a comfortable, air-conditioned environment while the remaining police force is deployed on the field. "Their issue is that I am in an air-conditioned room while others are not. I'm sitting there to serve the public. I am held liable for pending computer work, despite the fact that the majority of my duty hours are spent on non-IT-related tasks." (FDO 19).

FDOs also complained that Moharrars overburdened them with unnecessary reports and returns, which affected their primary responsibilities". "Readers of senior officers ask us to produce lists of specific occurrences, such as motorbike theft incidents in the last three months, even though they have access to these records. They do it for two reasons: to avoid their own responsibilities and to demonstrate their power and presence to us." (FDO 18). The overall result of this change in job description and extra work load is a substantial backlog. "During the last protest, I was called on 12-hour special duties and was not doing computer work at all. There is now a massive backlog." (FDO 3). In addition, FDOs complained that new, fresh work also keeps piling up, further compounding the backlog issue. "Pending work for a month is a headache. We are unable to complete it with the routine work." (FDO 4) Officers also admitted that Moharrars purposely overburden FDOs. "FDOs in Islamabad are at the mercy of the SHOs. They can place them wherever they see fit. The IT wing is not permitted to intervene." (Officer 6). The officers informed that there were administrative issues in managing FDOs from the IT Department; therefore, they were placed under the command of police stations. "There were many administrative issues like leave and human resource management that were difficult to manage from IT centrally; therefore, FDOs were transferred under respective Police Stations". (Officer 6)

(c) Availability of Adequate Staff. Under this subtheme, the research team asked FDOs and officers about deficient staff, gender composition, and the skill level of available staff. All FDOs complained about a shortage of staff. "Shortage of manpower is one of the biggest hurdles. We at the front desk have to take applications and deal with missing cards and document reports. We are the first ones to interact with the public. We even escort people to Investigating officers." (FDO 17). Usually there are only 2 FDOs at each Police station, and FDOs informed that, additionally, 4-5 FDOs are required at

each Police station. Ideally, there should be six posts, and three of them must be designated skilled staff. If FDOs are required at other assignments, there must be a sufficient number of people to keep the system functioning." (FDO 4). "Three 8-hour shifts should be scheduled. Three people should be appointed at the front desk and three for office work." (FDO 10).

One of the FDO members also lamented that their seniors are not responsive to our issues and fail to highlight them in the right forums. "Our officers receive sudden orders to send police officials to certain places or duties. Our officers should report to their seniors that their strength (Number) is not complete. But they don't report that. When we try to complain to top officers, they try everything they can to avoid this contact." (FDO 19) FDOs also highlighted that they have a higher work load during office hours, which is reduced in later hours. "Morning shift is very hectic. Most of the complainants visit the police station in the morning time. The station clerk and SHO are also inquiring about updates on previous cases, so more FDOs should be assigned the morning shift". (FDO 3)

In all Police stations, there is sufficient female staff availability. "A female constable is deployed at all 25 police stations. In 5 or 6 of them, two females of ASI rank are posted to facilitate the public." (Officer 2). FDOs were queried about the suggested gender composition of FDOs at Police Stations. Ideally, four male and two female FDOs should be appointed in each police station". (FDO 9). FDOs believe that the need for female FDOs is greater in metropolitan regions and far lower in rural areas, where women rarely visit police stations due to cultural biases. "In rural areas, females hardly visit police stations for complaints. So, there is less requirement for a female FDO in rural zone PS." (FDO 11)

In Punjab Police, FDOs are dedicated civilian staff, while in ICT Police, regular police are employed as FDOs. "Islamabad Police has not generated a separate cadre of IT staff. No one is recruited under this category. We have handpicked officials from different police stations who we believe have some capacity to learn IT." (FDO 1) Both the officers and FDOs were asked about their input on this issue which resulted in a mixed response from both of them. Some FDOs favored being in uniform as they are more familiar with the police investigative process. "Everyone must know how to work on computers. We should know how to work in the field, and the investigating team should know how to handle our work." (FDO 5). Other FDOs favored being in civics as they would be operating in one domain only and would not be asked for duties other than those listed in the job description. "FDOs from civil backgrounds won't be asked to do special duties on roads or leave their desks to escort accused to courts for hearings……..If FDOs are supposed to be cops, they should at least not be in uniform." (FDO 19). Some officers favored FDOs from the police force in uniform. "FDOs should be from the police force; they will be aware of the laws and procedures of investigation, unlike those with a non-police background" (Officer 6). On the contrary, few officers were found supporting a separate IT stream. "We need designated IT staff and skilled personnel. There can be separate setups for the IT wing inside police stations." (Officer 1)

FDOs and officers were asked about their skill level and ability to handle and operate the system. Despite the fact that computer skills are an essential work prerequisite, some FDO admitted that virtually few of them have them. "FDOs should understand the fundamentals of computers. They are stuck on software and cannot generate reports if they do not know how to work on MS Excel and MS Word." (FDO 4). In a tech-savvy environment, individuals other than FDOs should also have basic computer skills, which are absent. "There are many personnel in police stations who have great expertise in investigation but are unable to understand computers." (FDO 17). Officers also recognized the same fact. "Constables employed in the 80s were barely middle or high school graduates. Over time, they have reached the positions of investigating officers or station clerks. Their understanding of modern systems is minimal". (Officer 1). However, one officer accepted that there is a lack of interest in officers, and their drive is essential for system integration. "Educated officers will adapt to technological advancements if they are interested". (Officer 2)

Another issue that FDOS was concerned about was the frequent postings and transfers of employees. "I've had three postings over the last four years." (FDO 6). These frequent postings result in the induction of fresh staff who are not adequately trained and take a lot of time to grasp the system requirements. "After working for 3 years as an FDO, I am well versed with CMS and other required softwares. Now I am posted out to another department. The person replacing me will require three years to understand what I have learned." (FDO 10). Officers also supported the FDO's point of view. "FDOs are incapacitated in two ways: they are frequently posted to different places, and once a trained person is posted out, there is no one to guide the replacing staff". (Officer 6)

5.3. Software Support

Police officials emphasized difficulties connected to cyber security, backup repositories, ICT support, and the compatibility of digital records with the legal system under this theme.

(a)Cyber Security. Malware and cyberattacks were discussed with responders in this subtheme. There was a general dearth of information regarding this topic among FDOs. "I don't think even the officers are aware of malware attacks." (FDO 20) They had received no training or information regarding this critical issue, and no clear procedures for dealing with malware or a cyberattack had been provided. "We're just operators; we only know about the data we're feeding in and have no idea what's going on at the back end." The MIS was installed by the IT department, and they are concerned about its security." (FDO 5) There was a clear sense of leniency among FDOs because the system had not been hacked before. "MIS has not been hacked so far, but it can. I am not sure about security measures". (FDO 16). The same ambivalence was also experienced by officers who showed no urgency in dealing with this issue. "Officials in the police station don't understand that using private devices and the internet can be a big breach in the system. The intranet is a safe option that has been provided to police stations". (Officer 5). The ambivalence towards this important aspect still persists despite clear threat warnings in the past. "In 2021, I got a report from an intelligence agency that some of our data was leaked on the dark web. We checked, but it was not ours". (Officer 6)

The technical team stated that due to internet operations, cyber issues are being neglected in order to maintain normal operations. According to the technical team, there are standard security checks such as firewalls, SSL, and authentication; nevertheless, additional checks may cause the system to slow down. "We maintain security parameters such as VPN, next-generation firewall, WAF, and so on in accordance with SOPs." Even the most technologically advanced organizations in the world cannot guarantee complete data security. It will take a toll on processing performance and slow down routine business if we want to exceed the threshold degree of security for publicly released software. So we stay at a manageable level of security that does not hamper our everyday work. (Officer 8). The technical team recommended using the available intranet for operating the system to enhance its security and efficiency.

(b)Congruence with legal system. The technology was designed to eliminate paper from police records and digitize the entire record, particularly FIRs. However, because our judicial system cannot accept digital records, both manual and digital FIRs were reintroduced. "When MIS was implemented, manual FIRs were no longer permitted." FIR registration is now entirely online. The previous IG wished to eliminate paper from the system. But after a while, we resumed manual record-keeping." (FDO 3). Furthermore, due to a lack of system availability, each Police station maintains duplicate records (manual and digital). This redundant record-keeping is inefficient and overburdens FDOs. "There should be a single system, either entirely manual or entirely online." When both systems are operational at the same time, our workload is doubled." (FDO 4). The issue of system downtime necessitates the preservation of manual records. In police stations, "Daily dairy (Roznamcha)" is written online. If the online system fails to function properly, we must manually enter data in backdates." (FDO 6). The refusal to accept digital recordings as legal evidence in courts

necessitates duplicate record keeping in police stations, which is a major hindrance to digitization. "How can police work become paperless when digital investigation reports (zimni) are not accepted in courts?" (FDO 17). The court has issued orders requiring manual record keeping. "We began writing daily dairy online, but the High Court ordered that we also keep manual roznamcha." (FDO 1) Officers also emphasized the same point. "Digitalized data has no legal backing." There is no such law that allows digital case files in courts." (Officer No. 1).They believed that digitalization could only thrive if it was compatible with the legal system. "In the entire police system, the introduced technologies should be supplemented with relevant legislation; otherwise, technologies enhance rather than reduce work" (Officer 5).

FDOs complained about this duplicative record-keeping, which has increased rather than decreased the work load. "The introduction of MIS has increased our work instead of decreasing it." (FDO 10). In the case of Officers, they were aware of duplicative record keeping, and some even supported it. "We are maintaining dual records. Hard copies of all FIRs are also kept." (Officer 1). Due to the lack of reliability of the system, few officers even supported maintaining duplicative records. "I support these parallel systems. We can cope in unexpected settings if there is a power outage and we need some records in an emergency or the Interior Ministry urgently demands some information." (Officer No. 5)

The research has been hindered further by the constant switching between manual and computerized technologies. "FIR is now registered on the portal." When 50 or 100 FIRs are recorded, we collect the printouts and compile them into a book. Investigation reports are meticulously produced by hand. Their brief summary of 2-3 lines is included to the digital case file." (FDO 8). FDOs and officers were also questioned about the timescale for full digitalization, which elicited a mixed reaction. The majority of them believe that comprehensive digitalization is not feasible in the near future. "Using less paper is possible, but we cannot go paperless." (FDO 4). "It will take at least three to four years to digitize all previous records." (FDO 9) "In Pakistan, paperless and fully automated systems cannot function. Look at NADRA, for instance. Their technical teams comprise thousands of individuals, yet you get printouts in each service center." (Officer 7)

(c)ICT Support. As the system has been taken from Punjab Police, there were many issues in the gestation period. Initially, the portal was very slow. It used to take 10–15 minutes to open and run a system. Now it's fast." (FDO 1). However, with the requisite training, support, and guidance from the top hierarchy, the issues were gradually resolved, and the system is currently functioning smoothly. "We faced many difficulties in the launch period. IT staff used to help us out. IG at that time was very supportive. He took personal interest in resolving our issues." (FDO 7) FDOs highlighted a lack of ICT Police capacity to handle issues, and PITB is contacted for resolution of system bugs. The IT department at Islamabad Police lacks expertise to deal with bigger issues relevant to systems. In that case, technical staff from PITB is called for rescue." (FDO 10). "Our IT department is hopeless. There are very few competent people. The rest have no greater IT abilities than we have." (FDO 14)

Officers accepted capacity issues from the ICT Technical Department. "My understanding of the system was very limited in the nascent period. I didn't know how to resolve the issues." (Officer 2). They blamed the non-availability of technical staff for this issue. "The current IT team is insufficient to keep the system running. There are 20–25 police stations; moreover, MIS is used at other sites as well. We cannot accommodate troubleshooting issues at all times." (Officer 6). Due to the non-availability of IT Support from the integral IT department, PITB is frequently approached to resolve IT matters. "IT management in IP is done by PITB. All the softwares are borrowed from them. Even the URLs of our system are run through PITB". (FDO 21) "We are dependent on the management of PITB. If an issue arises at their sites, we don't have the access to resolve it at our end; frankly speaking, we don't have the capacity either." (FDO 6).

There was a lackluster response to suggestions for improvements by FDOs, and they were quite content with the system's functioning. "Right now, I don't believe any feature in MIS needs to be improved. If required, it will automatically with the course of time". (FDO 8). One FDO highlighted that presently the issue is the implementation of the existing system, and improvements can be carried out later. "The problem is not any missing feature on MIS. The problem is the implementation of the ones already there". (FDO 7). The FDOs also stated that a number of prerequisites are essential for complaint registration but are not endorsed by the complainant online, which results in its subsequent registration. In the case of missing documents, an affidavit is also submitted to the police station. Online complaints are usually incomplete, as the public has less information about the requirements. Online complaints in such cases should be formulated in such a way that the portal should not take the complainant to the next step unless requirements are fulfilled." (FDO 13) The officers were of the opinion that MIS can be better utilized if it facilitates the investigation process. "The data entered in MIS should be used to help us in our investigation. If we scan finger prints and enter them on CRMS, we should be able to retrieve all information related to these finger prints." (Officer 9)

Some FDOs also mentioned that the system is slow and frequently disconnects, which impedes data uploading and system operations. "The link goes down regularly but returns after 15-20 minutes; this occurs roughly 3-4 hours each day... Technical issues typically arise as a result of excessive system traffic. Last year, approximately 1300 FIRs were lodged in one police station, and Islamabad has 25 of them." (FDO 15)

A specific suggestion regarding delayed editing (after 24 hours) of information was asked from FDO, which garnered a mixed response. Some FDOs were in favor of the suggestion, while others didn't support it as it could be misused. "The editing option should be there for a few hours. I once entered the wrong offence in the FIR, which I didn't realize. Later, I was informed to correct it, but I didn't have any option to edit the data." (FDO 17). FDOs indicate that in case of any mistake, the IT wing has to be contacted to enable the editing option (FDO 6). Few FDOs recommended a time-barred editing facility with a minimum of 24 hours. The FIR should be editable for at least 24 hours. If an FIR is registered at night, it's better that the officer gets a chance to look at it in the morning and rectify any mistakes." (FDO 20)

Initially, the system was linked to the Punjab database, which aided in greater system utilization. However, the service has recently been discontinued. The data has been synced with the Punjab Police Portal. This provision is no longer available." (FDO 15). FDOs and police agreed that the criminal database of Pakistan should be made available online for improved investigation. A person's CNIC is entered into the system, and any FIRs or crimes done against that individual are discovered. This option is accessible for cases filed in Islamabad, but it should be expanded to cover the entire country of Pakistan." (FDO 6)"There are inter-provincial gangs that commit crimes in different provinces. Without access to national level data, police remain uninformed about the extent of their crimes." (Officer 5)

(d)Backup Repository. FDOs have mentioned backup data availability difficulties, which causes them to keep manual and hard copy systems as backups. "There is no backup for data at police stations. I'm not sure if PITB keeps backups at its end." (FDO 21). They were more geared towards manual systems due to a general lack of confidence in the system and its efficacy. "I'm concerned that if the computer's windows become corrupted or the system crashes, we'll be left empty-handed... After all, it's a machine." (Officer 2)

 FDOs believed that as the system is personality-based and the new administration might focus more on manual systems, they should keep a duplicative record as well to cater for their requirements. "Recovery of data doesn't come under the purview and expertise of police stations." (FDO 9). Officer

cadre was asked about this apprehension of FDOs, and they were generally ambivalent about apprehensions of FDOs. "Backup is maintained; I am not sure about the policy, though. The manual records also serve as backups of our data." (Officer 5). The technical team clarified that backup data is available with PITB; thus, most of the apprehensions were unwarranted. "Backup servers are kept at the IT wing, which is making replicas on devices. Backup is maintained at PITB as well." (Officer 6). Still, the apprehensions of some FDOs remain. "There was an issue on the main server, and all of our data was lost. A part of the data could not be retrieved." (FDO 1)

5.4. Conventional Vis a Vis MIS System

(a)Efficient processing of data. FDOs and officers both endorsed the fact that the investigation process has been substantially improved due to the MIS system. They cited Hotel Eye as an example, which permitted severe inspections on all hotel check-ins using CNIC numbers, as this application allowed tracking of all suspicious CNICs. "Hotel eye application is also linked with CNIC. Hotels and Guest rooms enter the CNICs of their guests in the system. An alert is generated if any suspect or criminal checks in." (Officer 10). FDOs and officers gave multiple examples of the ease of processing information through digitization, which helped expedite investigations.

"Criminal records were maintained in big registers earlier. It used to take a lot of time to verify the records of proclaimed offenders. Now these records are one click away." (FDO 5). "Investigation is speeding up." (FDO 15).

"A CRO number is assigned once the profile of any criminal is uploaded on CRMS. This CRO number is valid forever. If another FIR is registered against this person, there is no need for re-entry of data; only the FIR is updated." (Officer 9)

During the investigation, we first check if the suspect is a registered offender or not and if there are any people who have been involved in such types of crimes in that particular area. Digitalized records are very helpful in this regard." (Officer 10)

FDOs noted that the MIS system allows ease in tracking and reviewing complaints launched on the portal. "We have drafted a crime diary. Now we add the figure, do a little editing, and take print." (Officer 2). The system has built-in timelines, and this system raises notifications for delayed investigations. Thus, the system has improved efficiency and accountability through digitization. FDO also acknowledged that MIS allowed swift registration of FIRs. "It used to take 1-2 days to file an FIR. Now we register 3–4 FIRs per day." (FDO 3). Moreover, the online system allowed ease in the registration of crimes, and linking criminal records with CNIC has helped identify criminals. "We had a cup of tea in one hand and a pen in the other while writing the FIR manually. Now that both hands are on the keyboard, we are fully attentive with eyes fixed on the computer screen." (FDO 5).

(b)Improvement in Police System. We remained focused on the implications of digitization on accountability, openness, and public perception when modernizing police systems. FDOs and officers stated that the MIS system has improved accountability in the police system and that seniors may check on the performance of their subordinates. "Proceedings are supposed to take three days. If they are not, we are inquired about the unfinished business. The Inspector General's office may also take notice." (FDO 16). Furthermore, the placement of cameras in police stations has compelled officers to change their approach towards locals and to create a welcoming environment, particularly for women. "There are multiple cameras installed in the police station. We cannot misbehave with public." (FDO 7) "Ladies told me themselves that they feel very safe and comfortable at the front desk and their fear of police station and its environment is gone." (FDO 16). Although sufficient improvement has been witnessed, "There is always a margin for improvement in public dealing" (Officer 5). Transparency has also improved after the introduction of technology, but corruption has not been fully mitigated. "Transparency cannot be achieved until all records are completely

digitalized." (FDO 4) "Any changes made in FIR can be easily detected in both old and new systems." (FDO 6). "The investigating officer can still follow corrupt practices, if he desires." (FDO 19). "Unfair means and corrupt practices are definitely controlled, as MIS allows us to keep a check and balance and monitor the police stations." (Officer 5). "Transparency is improved, but it really depends on the officer and the team working on it." (Officer 10).

The research team also tried to see the impact of digitization on the improvement in conviction rates. There was a mixed response to this question, in which some of the respondents reported better conviction rates while others reported no change or decline. "I have no idea about the conviction rate" (FDO 21). "The conviction rate is improving, in my opinion." (FDO 9). "The conviction rate is the same or has probably declined. The reason is that technologies are brought in but not effectively used at the base level. Criminal records are there, but less than 5% of cases were solved with them last year." (Office 10) However, the claim by the officers was not substantiated with any credible data.

There is a general realization amongst FDOs and officers regarding the need for digitization and its advantages. "Management systems are aptly designed. I enjoy working on them." (FDO 16). "Modernization of police systems is the need of the time, especially when criminals are outsmarting police in technology." (Officer 1). Despite its advantages, they reported a lack of interest from all tiers in the digitization process. "Lack of interest is there. Some people don't want to opt for new systems, even at the in charge level. Few of them can forcefully opt; others may not". (Officer 6). In the officer's opinion, the drive for digitization has to come from the top, as the "top-down approach works better in police." (Officer 8). FDOs also highlighted that progress on digitization is linked to the priorities and interests of senior officers. "There was pressure on senior officers, so they used to keep a check and balance. They created a form on which it was reported how much work we were required to do in the month and how much was pending." (FDO 14).

(c)Public Satisfaction. There was a mixed response about customer satisfaction from FDOs. Most of the FDOs felt that CMS had resulted in better customer satisfaction. "Locals are happy; their petty issues like loss of CNIC or passport are resolved in time without making any personal visit to the police station." (FDO4). "Complainants show their appreciation for our digital system and set up in Police stations." (FDO 8). As per FDOs, educated people can effectively use this facility, and people are happy with this facility as they can launch FIRs for their petty issues easily. "Two types of people complain online. The first type are liars. Honest people come in person to file a complaint, while liars accuse innocent people out of sight. The second type are educated and sophisticated people who rely on technology." (FDO 4). Some FDOs also complained about frivolous complaints and were of the opinion that online complaints are useless. "In CMS, we normally receive the complaints, not the application, which is required for the registration of an FIR. We have to approach the complainant again and again to visit us at the police station for the case to proceed." (FDO 7) "15 helpline is sufficient for complaints. Online complaints should not be allowed. It creates pendency for no reason" (FDO 8). Officers claimed better user satisfaction with FIR filing and registration. "Filing an FIR used to take a lot of time. We had to tell the complainant to wait for a copy of the FIR or to come back the next day for it. Now the moment FDO types the FIR, we take a print and hand it over." (Officer 1). However, FDO 18 explained about technical issues that result in multiple visits by customers: "People need to pay multiple visits to the police station to get their FIR registered in case of power failure or internet disconnection." (FDO 18). Frivolous complaints were a major concern for FDOs. "A lady made a complaint online that her tailor didn't stitch her clothes on time." (FDO 3)

5.5. Findings of Public Interviews

In order to gauge the public's perception and their experiences with Islamabad police, IDIs of 11 complainants were conducted. Diversity in terms of severity of incident and mode of first interaction with police was ensured. The demographic profile of the respondents is presented in Table 3.

Participant	Gender	Age	Edu	Incident	Mode of initial complaint	Status of Complaint
Participant1	Male	22	Bachelors	Loss of Wallet	Visit to police Station	Unresolved
Participant 2	Male	20	Bachelors	Attempt to Murder	Visit to police Station	In progress
Participant 3	Male	39	Middle	Fight	Visit to police Station	Resolved
Participant 4	Male	21	Bachelors	Loss of Wallet	Visit to police Station	Resolved
Participant 5	Male	45	Masters	Theft at Home	Visit to police Station	Unresolved
Participant 6	Male	47	Bachelors	Car Theft	Call to Police Helpline	Unresolved
Participant 7	Male	45	Doctorate	Car Theft	Call to Police Helpline	Resolved
Participant 8	Female	38	Doctorate	Harassment	Online	Unresolved
Participant 9	Female	25	Bachelors	Land grabbing	Online	In Progress
Participant 10	Female	27	Bachelors	Loss of Mobile	Online	Resolved
Participant 11	Male	30	Bachelors	Land Grabbing	Online	Resolved

5.6. Occurrence of Crime

Most of the respondents had no knowledge of the online complaint system and relied mostly on personal visits to the police station. "I left the car for 5-7 minutes. When I came back and didn't find my car in its parked space, I immediately called the police helpline. "(Respondent 6) "I reported the robbery the next day." (Respondent 5) "I immediately informed the security guards of the society and called the police after an armed robbery at my home." (Respondent 7) "I kept looking for my wallet for some time and searched all possible places. I asked many people and inquired from shopkeepers as well. Then I went to the police station to file a missing report." (Respondent 1). Only one respondent, whom we contacted, reported an occurrence of crime through CMS. "When I realized that my mother's mobile was missing, I immediately logged into the online portal to file my complaint." (Respondent 10)

5.7. Communication with Police

The respondent, who had registered an online complaint, was quite happy with the performance of the police and was surprised to note that FIRs can be registered online without visiting the police

station. "My father didn't believe that our complaint was actually filed through the portal, so he went to the police station himself. He was informed that our complaint has been registered already and gave him the tracking ID." (Respondent 10)

In most cases, respondents confirmed a quick initial response by the police. "The police mobile van immediately arrived at the venue within 3–4 minutes. A sub-Inspector from the nearby Thana also arrived. I received calls from the IG office 2-3 times about whether police reached me in time after my complaint.' (Respondent 6). They also acknowledged the quick registration of FIRs through FDOs. "I went straight to SHO's office as I was unaware of what to do. I was asked to see FDO. He filed my FIR, which took hardly 5 minutes. He was very kind and treated me with respect." (Respondent 1) "FDO asked me to write an application. They took my contact number and told me that they would inform me about updates, if any." (Respondent 5) "The whole procedure took around 2 hours." (Respondent 2). "They asked me to write an application. The next day, I contacted them and inquired whether my FIR had been registered or not. They sent me a copy on WhatsApp. I didn't need to go to the police station myself." (Respondent 7). "I emailed the police for follow-up, and they used to respond back to my email. I then requested that they give me updates on my phone, and updates were then sent via phone." (Respondent 10)

Some people also illustrated visits to the police station after filing a report. "After filing an online complaint, we had to go to the police station for an FIR and other formalities." (Respondent 9). There were respondents who reported unfair dealings and delayed contact at the initial occurrence. "I waited for quite a long time. No one was attending to me properly. I then went to see the SHO and started talking to him in Pushto. He then called someone to attend to me on priority." (Respondent 4). Although most respondents informed us about the prompt initial response, there were issues with follow-up after the initial registration of complaints. "I had to call the police myself for the follow-up on my case." (Respondent 6) "I never received any call for follow-up, nor had I called them myself. I didn't have any hope of recovery." (Respondent 1). Almost 50% of respondents reported that their issue was resolved after contacting the police, but there were some issues with its final disposal. "I received a call from an Intelligence Agency in Lahore that my car had been found. My car was located within three days. After coming back to Islamabad, it was parked in the police station for a week." (Respondent 7)

5.8. Takeaways of Public from their Experiences

In the takeaway section, we discussed the overall experience of dealing with the police, transparency awareness about online complaints, and suggestions for improvement in the system. Experience dealing with police elicited varied responses, with a few people complaining about the lack of interest shown by the police, especially in investigations. "I don't think they even tried to investigate. My Car was lifted from a main road in proximity to a police station, and safe city cameras were also installed there, but the police didn't take the case seriously. They just used to ask if I had received any calls for the ransom" (Respondent 6).

"Not a pleasant experience. I was more pleased to have dacoits in my home than to interact with the police." (Respondent 7)

In some cases, even after case resolution, people had issues with the police. "When my car was recovered in Lahore, I received a call from SHO saying that the police don't have the resources to bring your car back. It will take a few days, and then nobody can guarantee in what condition your call will be received. I rented a car and booked a hotel room for them for three days. This police trip cost me 100,000 bucks." (Respondent 7). "The conviction rate of police is definitely improving. The actual problem starts after recovery." (Respondent 7). There were people who had a good experience with the police. "I had a pleasant experience with the police; they treat you quite well." (Respondent 11). As per most respondents, the initial FIR system has been expedited with digitization, but the

police investigation process is still outdated. "Filing of FIR is very smooth and swift now. I didn't feel any change in investigation methods or speed." (Respondent 3) "My jewellery and mobile were snatched at gunpoint. The questions of the police made me more uncomfortable afterwards." (Respondent 8)

The transparency is a bit improved as fear of security cameras forces police to take precautions while asking for bribes, but overall, the culture of bribery still persists. "Police officials take bribes outside the police station now because of security cameras installed at police stations." (Respondent 3). Most of the respondents had no knowledge of the online complaint system, but the people who used it were supportive of its utility. "I knew about the online complaint mechanism through a friend. My family had some interactions with the police through the 15 helpline, and all experiences were terrible. This online experience is better." (Respondent 10) "I didn't have any idea about the online complaint system. Even if I did, my natural response after car theft would have been to call the police helpline rather than browse my mobile and write an online complaint." (Respondent 6). People did face issues in the initial sign-up process and the registration of complaints. "I had an idea about online complaints." I browsed the Islamabad Police website and signed up. I didn't get any clue on the website about how and where to write a complaint. I came to know afterwards that online complaints are registered through the Safe City website. How on earth was I supposed to know that?" (Respondent 8) "The online complaint tab on the Islamabad police website should automatically take you to the Safe City website." (Respondent 8). Some even suggested video tutorials for better understanding online complaints. "CMS should be made user-friendly. Video tutorials about online complaint filing should be given on the website to engage the public from different age cohorts and socioeconomic backgrounds." (Respondent 11)

5.9. Discussion

In the infrastructural landscape theme, we noticed that a number of FDOs claim that the system is usually not available. A number of disruptions, as highlighted in the existing literature (Dutta, 2016), are quite common and hamper the routine functioning of the system. The input from system administrators revealed that despite the availability of a functional, safe city intranet at 20 Police stations, the FDOs are mostly using the internet for data entry, possibly for their own ease. The internet facility has its inherent issues of data availability, security, and bill payment, which get delayed by bureaucratic snags coupled with a struggling economy (Escalona, 2020). In the absence of the internet, FDOs are unable to shift to the intranet due to technical issues, which result in system non-availability and disruptions in work. This team believes that the functional intranet, where available, can be used as the prime means for data entry, while endeavors should be made to bring the remaining PS off the intranet as it will increase system availability and decrease reliance on the internet.

Regarding the work environment, the research team's analysis is that there is a shortage of staff, which should be cooped up with new enrollments; however, the same can be reduced by decreasing the outside job employment of FDO. Moreover, it was felt that the complete system has been developed by the Punjab Police, and there is no specific requirement for highly skilled staff for its operation. As stressed by Al-Zaabi et al. (2013), system operations require skilled technicians who should be adequately trained through special training or on-the-job training. The requirement of a dedicated space for data enrollment at each PS is a genuine requirement that should be addressed by police authorities. Overall, it was felt that the system is quite user-friendly and can easily be operated with minimal training. FDOs complained that they are regularly utilized on regular patrol duty by their superior staff, which hampers their routine functioning. The administrative issues dictate that the FDOs remain under the control of their respective police stations; however, a mechanism should be devised to keep their employment outside of IT-related tasks to a minimum.

One of the major impediments to the implementation of digitization is the non-acceptance of digital records as evidence in court proceedings. The prosecution of criminals through the courts is one of the prime policing functions. At present, digitization is not supporting the prosecution process as our legacy legal system does not permit digital records in courts. This forces duplicative record keeping in manual mode along with digital record keeping, which is quite cumbersome and hampers the digitization process. This also results in an increased workload for the police (Kumar, 2012). Our legacy legislation has to be revised to allow the digital record to be used as evidence in courts.

Our research has found that there is a nonchalance in ICT regarding the digitization process from top to bottom. There are bound to be teething problems associated with technology adoption, and the same is being witnessed in ICT as well. To enable smooth integration, however, the driving power must come from the top down, particularly from the officer cadre (Sumner, 1999). Unfortunately, there was a mixed reaction to technology adoption. All of the police officers interviewed for this study demonstrated a general lack of interest in technology adoption. Officers are aware of the relevance of this initiative, and they have all acknowledged its utility, but on-the-ground activity has been lacking. One of the main reasons could be the challenges of routine policing in the peculiar environment of Islamabad, which are overwhelming and put this important issue on the back burner. The importance of top management was also acknowledged by FDOs, who admitted that the process of digitization and technology adoption is dependent upon the incumbent IG's priorities and is expedited exponentially with the personal interests of the IG.

The laissez-faire attitude is quite visible in top management, which trickles down to FDOs. All of the FDOs included in the study were found to be highlighting their personal issues and grievances. Despite using this system for a considerable time, they were unable to give any input for system improvements. FDO were focused more on their duty schedules and employment on policing duties. It is understandable that effective human resource management and development are essential for technology adoption and need to be improved. However, FDOs, being prime system users, should have the capacity to identify the issues within the system and highlight them for improvement. It was disheartening to see the lackluster response from FDOs, as it showed their lack of motivation and drive towards technology adoption. Having said that, this lack of user acceptability regarding technology adoption is prevalent (Al-Zaabi et al., 2013). Being the prime drivers of this digitization process, there is a need to overhaul the FDO stream and give them the right incentives to perform.

The data security issue was highlighted as the major impediment to technology adoption, therefore, input from the technical team was sought on this aspect. Moreover, in a prevalent environment, data accessibility and security are essential for technology adoption; hence, people's perceptions about this aspect were also covered. The research found a complete lack of interest and awareness in the police ranks regarding system and data security. Data entry through the internet should be discouraged and phased out sequentially, as a standalone system would be more secure and less susceptible to cyber-attacks from hostile elements.

In the opinion of this team, digitization is in progress, and its impact on the overall conviction rate is not visible at this stage. We believe that there has been no significant change in conviction rate so far after digitization, as the same would be true for FDOs and officers. Technology adoption is not merely the introduction of a few softwares and digital gadgetries; it demands an overall change in culture and force outlook (Ellahi & Manarvi, 2010), which was not visible in the Islamabad Police.

At present, the system is being operated only by FDOs in silos, and the police as a whole has not accepted the technology. The officers and other police staff sparingly used the system, and the complete load of digitization is being borne by FDOs, which results in their overloading with work and shortage of manpower issues. The main purpose of digitization is to reduce manpower by adopting technology. On the contrary, the systems introduced in the Islamabad Police have resulted

in an increase in manpower with additional manpower demands. There is always an inherent friction to change, and the same is visible in the Islamabad Police. This issue cannot be resolved until there is a cultural shift and the entire police force, from top to bottom, starts using the system. Eradication of duplicative record-keeping is essential for this purpose; however, the same cannot be achieved without legal reforms and a push from the top. The police force is still using manual hard copies for routine correspondence, which needs to be shifted to the intranet. This single step would force everyone to use the MIS and reduce reliance on manual systems. The usage of the MIS by all users would reduce the load on FDOs and allow better integration of the system. Another important step can be the automatic logging and updating of register no. 2 Roznamcha by all members of the police station themselves, which would curb its misuse and inculcate transparency.

This research found a major gap in the general public's awareness of the digital complaint entry system. Most of the complainants interviewed were either ignorant about the digital complaint registration process or hesitant to use it. The negligence of the general public regarding technology is due to several factors, including digital illiteracy, user friendliness, and system efficiency, among others (Joshi, 2005).

In its drive for digitization, the Islamabad Police has deployed three softwares, each with its own peculiar purpose. As a result of our research, we found their actual vis-à-vis perceived utility and issues in their operations, which have been covered in Table 4.

Table 4: Comparison of Management Information Systems

Software	Purpose	Actual Utility	Issues
CMS	Used for Online compliant registration	The system has shown significant ease in initial complaint registration by populace	• A no of frivolous complaints being launched • Good for Petty crimes but has less utility for heinous crimes
CRMS	Used for criminal record management	Helpful in identification of criminals and investigations	• Data entry facility availability at Safe City and Kacheri • Data entry Option not available at PS • Limited database
PRMS	Police station record management system (replica of 25 registers)	Ease of access to investigation data Better Transparency	Duplication of effort (manual and computerized data entry)

Table 5 shows an accountability matrix in which the improvement in accountability at each tier has been accessed, and issues that are hampering these accountability processes have also been highlighted.

Table 5: Accountability Matrix

Tier	Manifestation	Issues
Upward	Better visibility of PS performance at SP/ CCPO / IG Office	Inertia to use of system by Higher office staff, Lack of IT acumen

Downward	Public facilitation: Ease of complaint / FIR Registration	Power / technical issues result in multiple visits
Internal	Inter-police station data transferability	• Duplication of effort • Lack of IT acumen

CONCLUSION

Technology adoption and digitization are game changers that, if utilized effectively, can potentially revolutionize policing in Pakistan. However, there is a need to overcome inherent inertia and embrace the cultural shift to reap its full benefits. This research aimed to find the impact of technology adoption on the Islamabad Police and its impediments, looking through the lens of its users.

Our research has found that there has been a significant improvement in Police functioning through digitization, as there is increased transparency, improved monitoring, and ease of record keeping. The investigative process and crime mitigation have been facilitated due to the ease of accessing data; however, the same can be further enhanced by further building on the database and incorporating other provinces as well. Non-congruence with the legal system is one of the major impediments to the digitization process and needs correction through legal reforms. Despite its potential benefits, digitization is not a priority for top management, which has resulted in its lackluster adoption. FDOs are the prime drivers of the system, and their effective Human resource management can further facilitate the digitization process. Data security and its uninterrupted availability are another concern that can be addressed through more reliance on an OFC-based integral intranet, which should be the primary means of software access rather than the internet.

There is a lack of awareness in the general public about MIS; however, the individuals who have utilized it acknowledge its efficacy, which further substantiates its expedited implementation. Although complete digitization of the police force to a paperless environment is not envisaged in the near future, a concerted effort can facilitate the evolution of the Islamabad Police into a tech-savvy digitized police force, fully geared to meet the challenges of the 21st century.

POLICY IMPLICATIONS

In the present tech-savvy milieu, technology adoption is essential for effective policing. Being cognizant of this fact, our policymakers have taken the right steps towards digitization and automation in the Islamabad Police with a financial overlay of Rs. 704 Million. The project commenced on July 21 and aims to be completed by July 23. Technology adoption is not merely the introduction of softwares and technical gadgetries but encompasses a cultural change in its outlook and acceptance by its users. The same was incorporated in PC-1 of the project, which highlighted the need to employ subject matter specialists in human behavior to holistically address the expectations of the citizens. Our research has found that digitization has shown its utility and substantially improved the policing of ICT; however, a few teething problems still remain that need to be addressed. After having gone through the research process, the following policy measures are recommended that would further enhance the process:

7.1. Congruence with Legal System. The requisite laws need to be passed by Parliament to allow digital records to be admissible in court as evidence. This single step would substantially facilitate the prosecution process and subsequently reduce crime. Moreover, it would reduce the inherent friction in the police against digitization as they would see its actual utility in prosecuting criminals.

7.2. Drive from Top. The police is a hierarchical organization, and any change in any such organization has to be introduced from top to bottom. The top management in the police department needs to make digitization a top priority and a Command Goal. They should start setting project goals with strict timelines that should be vigorously implemented. Separate KPIs should be set for police officers with regards to their contribution to digitization at their output.

7.3. Formulation of Big Data. At present, digitization in the police is being implemented in Punjab and ICT only. The same needs to be replicated in the remaining provinces with an interlinked system to formulate a database of Police records for the entire country. This would allow each province's Police to access the criminal database of the remaining provinces and facilitate swift identification and apprehension of criminals.

7.4. Efficient Human Resource Management. FDOs are the prime drivers of the digitization process, and their effective human resource management would expedite its smooth implementation. A comprehensive regime for FDOs should be formulated in which they should be incentivized for good performance through promotions and other incentives. The regime should cover the balanced gender composition of FDOs as per area requirements and provide them with dedicated work spaces at each Police Station. Owing to the development of a user-friendly system, no issues with respect to training the system emerged; however, the same needs to be reemphasized through frequent refreshers and on-the-job training.

7.5. Inculcating Cultural Shift. There is friction with technology, and the Islamabad Police is hesitant to use this system, which is being relegated to FDOs only. The overall impact is the demand for a separate force for digitization, which is against the spirit of digitization. The same cannot be mitigated without introducing a cultural shift where complete force is used in the system. One important aspect in this regard is the processing of routine police correspondence digitally. The existing intranet infrastructure can be used to shift routine police correspondence digitally. This step would nudge the police force towards digitization and acceptance of technology.

7.6. Intranet availability & Security Concerns. At present, Police are using the system on the internet as their primary means of communication, which has serious security issues and is susceptible to denial of service and other cyberattacks. In all the organizations, internet is used as a private intranet, which entails a substantial financial overlay. In the case of Islamabad Police, a rugged intranet system is already available at 20 out of 24 Police stations for safe city cameras, which can be easily used to operate the MIS as well. Therefore, the intranet facility should be extended to all Police stations, and the MIS system should be operated mainly on the intranet to enhance the cyber security of the system. The Internet should be a secondary means of accessing databases and should be sparingly used.

7.7. Awareness drive for General public. The research has highlighted the lack of information in the general public about CMS. Moreover, the users of the CMS system were generally satisfied with its performance and gave positive reviews, which necessitates raising awareness among the general public about its availability and providing information about its usage. Towards this end, there should be a concerted media campaign to inform the general public about its availability and how to use it through online video tutorials.

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