

ICT and Future of work: Implications for Economy and Society with Special Reference to Policing

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Abstract: The study analyzes the initiatives taken by Punjab Police to promote e-governance and ICT in police department with a socio-economic lens. In order to have a better understanding of this contemporary phenomenon, the research focuses on digitization and automation of FIR and Public Complaints system in City Police Gujranwala during the last five years. The study also analyzes the impact of these e-initiatives on the transformation brought by ICT tools in user satisfaction index, public satisfaction index, trends in crime, service delivery indicators, resolution of public complaints, completion of investigations etc. For quantitative analysis, the data has been collected following Probability Sampling technique and Purposive sampling technique and interviews and surveys have been conducted among the stake-holders in District Gujranwala. There are three major findings of the study: 1) the implementation of e-policing has made disposal of complaints quicker in district Gujranwala; 2) e-policing has exerted a significant impact on the efficiency of police department and 3) the prevalence of law and order condition has declined the crime rate in Gujranwala.

Index Terms: ICT, e-governance, e-policing, e-FIR, CCP, PAFIS, PS

1. INTRODUCTION

With the advent of Industrial Revolution, each aspect of our life and work has become more digitalized and automated. Computer aided dispatch systems and appliances are now used as a major tool for strategic planning and decision making across. Information and communication technology (ICT) and e-governance¹ are being introduced in public sector at a fast pace. This is going to change the work output and performance efficiency of public sector organizations including police in many ways. Police department across globe has benefitted a lot from ICT by running systems related to record management, crime investigation and complaint filing and efficient resource allocation.

In Pakistan, Policing is the major area of governance. Its performance and service delivery exerts a direct impact on socio-economic development of the country. Improvement of law and order and security situation can lead to economic growth and social stability while its deterioration can have equally adverse effects on the economy and society. Since Pakistan has experienced a lethargic e-government growth rate over the last few years due to plethora of political and economic constraints and also due to the deterioration of government institutions (Arfeen & Kamal, 2014), the need to strengthen the tiers of government through ICT and to deliver public services to the key stakeholders has become crucial.

The introduction of ICT in police framework especially in Punjab is immensely has immensely effected the culture of work, effectiveness and efficiency of the department by making citizens able to lodge complaints through email which are the directly addressed by relevant authorities. It has not only made complaint and FIR lodging easier but has also minimized the opportunity cost of time and travel associated with it. It is thus important to study the transformation of police from conventional methods to the use of ICT and to assess the potential impacts of this transformation on the service delivery. In order to make rich and in depth analysis, the study has been limited to the implementation of Online FIR and Citizen Complaints Portal in Gujranwala Police during the last five years. Moreover, the study will be limited to the context of socio-economic development.

The study will analyze the transformation of Punjab Police from conventional work methods and tools to ICT, results of this transformation, ensuing challenges, and its socio-economic the implications. In order to have a better understanding of the phenomenon, the research will focus on digitization and automation of FIR and Public Complaints system in City Police Gujranwala during the last five years. Since FIRs and Public Complaints are directly related to public service delivery, they can have significant socio-economic implications. Therefore, the impact of these e-initiatives on crime prevention, performance efficiency and public satisfaction will also be studied and discussed.

¹ E-governance is defined as the process of adapting information and communication technology (ICT) tools for digitizing and automating internal operations of government and for facilitating its external interactions i.e. with citizens and agencies (OECD, 2009).

The study aims to address the following research questions:

1. To study the initiatives taken to implement E-Governance and ICT in Punjab Police.
2. To examine the impediments in introduction of ICT and E-governance in Punjab Policing
3. To understand and evaluate the impact of this technological transformation on police work-culture, service delivery and performance efficiency in District Gujranwala

2. LITERATURE REVIEW

A large amount of literature is available on the subject of ICT and future of work and its implications for society and economy. It reveals that governments are increasingly moving towards E-Government, whether in developed or in developing countries. In developed countries, the implementation of E-Government initiatives aim more and more at effective service delivery to citizens (Mahmood, 2013). The E-Government paradigm emphasizes coordinated network building, external collaboration, and customer services rather than the traditional bureaucratic paradigm, which emphasizes standardization, departmentalization, and operational cost-efficiency.

For many developing countries, successful implementation of E-Government programmes is dependent both on national IT plans and e-readiness assessment plans. The most significant implementation challenge is perhaps security which requires security solutions like encryption, digital signatures, passwords and user names (Alshehri and Drew, 2010). (Chan, Brereton, Legosz, & Doran, 2001) emphasized that rapid flow of information has enhanced the performance of the police department in Queensland. It has also transformed the department by upgrading the methods of dealing with crime and law disorder. The technological advancement in Queensland Police Service (QPS) further sheds light on the apprehension that increased access to computers and information is not a short cut to improve the functioning of police department. In order to increase the return on investment in IT, the organizational structure of police department also needs to be changed.

(Frank & Binpe, 2013) examined the role of information and communication technology (ICT) in effective policing by employing cross-sectional survey method for data collection. The sample comprised of six hundred respondents selected using multi-stage random sampling technique and purposive technique. For empirical evaluation of the relationship between the variables, Pearson's Product Moment Correlation technique was used. The results confirmed that ICT and other technologies improve the performance of the police department.

(Jackson, Greenfield, Morral, & Hollywood, 2014) analyzed the potential correlation between information technology and the performance of police activities. Logic model was employed to empirically analyze the budgetary and productivity effects of IT investments. The findings confirmed that IT system exerts a significant positive impact on law enforcement. The study further stressed that the role of IT is that of a multiplier to increase potential productivity of police department.

Since digitalization and automation of work in Punjab police is a rather contemporary phenomenon in case of Pakistan, only a few studies have analyzed the impact and implications of this transformation in police department in the socio-economic perspective. The absence of appropriate data for research is the major limitation in this regard. However, (Ellahi & Manavari, 2010) examined the key determinants behind the acceptance of technology and attitude of police officers towards the use of information and communication technology. For empirical analysis, data was collected from 200 respondents across Pakistan. The results concluded that psychological response and organizational reactions of implementing ICT in police department cannot be neglected if we want to improve the performance of police department otherwise, this extraordinary development rate of IT can make the economies suffer from additional costs. The study further suggested that the police department and IT policy makers should collaborate for better outcomes.

(Perito & Parvez, 2013) argued that the effectiveness and efficiency of police department can be enhanced by improving police-public relation. In this regard, the role of media is significant. One such attempt to halt extremist violence is by broadcasting police activities in the community and also by reporting district and provincial level news on local television channels. The study further concluded that implementation and adoption of innovative technology is assisting to fight against criminal violence, terrorism and has made the process of filing complaints quicker and easier.

(Arfeen & Kamal, 2014) explored the future prospects of e-government and ICT in Pakistan by briefly describing various e-government projects and a number of diverse initiatives in Balochistan province. Case-Study-based approach was used for data collection and analysis at provincial and district level. The findings confirmed the willingness of government officials to use ICT as a tool to speed up operations and to improve their performance. The findings further declared that lack of IT skills, capacity building and cultural issues to be the major impediments in efficient utilization of resources.

(Haider, Shuwen, & Abbassi, 2015) investigated the variables that facilitate the adoption of e-government driven institutions in Pakistan. The study stressed that e-government has become an integral part of public administration and employed "unified theory of acceptance and use of technology" (UTAUT) model to analyze the penetration of e-government services in Pakistan. The data was collected through online survey. Factual spellbinding examination was applied on the response received from 200 Pakistani nationals. The findings suggested that government needs to publicize the rights of individuals and spread awareness among them about an appropriate way of using them to make the system more efficient.

The review of literature reveals that there is a serious dearth of knowledge on the subject with special reference to policing in the context of Pakistan. It emerges that no research on 'implementation of E-Governance in City Police Gujranwala' has been conducted so far and this is what this study shall focus upon. Thus, the study of City Police Gujranwala in this context is unique and new in its orientation and scope.

3. DATA AND METHODOLOGY

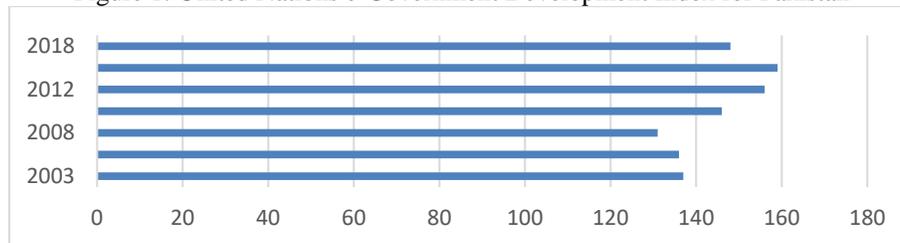
For this study a mix of Quantitative and Qualitative research methods has been used. The Quantitative method has been applied to studying the numerical data pertaining to status of implementation of ICT and the changes brought by this change of work tools vis a vis trends in crime, service delivery indicators, resolution of public complaints, completion of investigations etc. in order to study objective outcomes of this transformation. Qualitative method has been applied to understand and analyze the challenges of this transformation and its socio-economic impact by conducting key informant interviews, raising and focusing on the relevant aspects of the research questions, including but not limited to; How ICT is changing the future of policing work? How is ICT influencing the perception of transparency? Why many people still resist this transformation? How is this transformation impacting the society?

For data collection Probability Sampling technique has been used to conduct interviews and surveys among the stake-holders i.e., clients or users of the Citizen Police Portal among general public and complainants of E-FIRs in District Gujranwala. Both primary and secondary sources have been used for this study. Primary sources include interviews and surveys which have been carried out to collect first hand data primarily from general public and police officials. Citizens and police officials randomly selected from each of the ten police sub-divisions in Gujranwala District, including Qila Didar Singh, Noshehra Virkan, Khiali, Cantt, Wazirabad, Satellite town, People's Colony, Kotwali, Kamoke and Model Town, were interviewed and surveyed upon. The secondary sources include books, journals, newspaper articles, websites and research papers. The sample of the study comprised of 190 respondents. To triangulate the findings of the survey, have deeper insights and include the perceptions of the diverse stakeholders, approximately ten community members and ten police officers from each sub-division of District Gujranwala were included in the survey. The first category of questionnaire is filled by 45 citizens who have ever interacted with police department within District Gujranwala; the second category is filled by 45 police officers from the target area; the third category is again filled by 50 citizens and the fourth category is filled by 50 police officers. The data gathered through this survey is entered into an SPSS database and then frequency tables and cross-tabs have been generated to respond to the key question.

4. E-GOVERNANCE IN PAKISTAN

Pakistan passed its first ever national IT policy in 2000. With substantial shifts in technology, National IT policy was replaced by Digital Pakistan Policy in 2017. As per United Nations e-government survey, Pakistan ranked 137th out of 192 countries in 2003, 136th in 2005 and 131st in 2008. In 2010, the ranking fell drastically to 146th. Similarly, in 2012, it further dropped to 156th. In 2016, Pakistan stood at 159th position and as per latest measure, the country's position is 148th as of 2018.

Figure 1: United Nations e-Government Development Index for Pakistan



Source: United Nations e-government survey 2018 (Pakistan)

The major high score countries include United States, Canada, Denmark, Finland, Netherlands, Japan, Australia and all high income countries that have enough resources to expand e-governance initiatives. However, the neighboring emerging economies such as India and China rank 96th and 63rd as per 2018's ranking whereas, Afghanistan ranks 177th and Iran holds 86th position. The major contributing factor behind Pakistan's low ranking has been the system of public service delivery being outdated and cumbersome. During the period 1976 to 1997, more than 200 recommendations were formulated and recommended by Pakistan Public Administration Research Center to cater the quality of public service delivery. However, only 53% of the total recommendations were approved which resulted in wide range of inefficiencies.²

4.1. E-governance initiatives in Punjab

Since a great deal of practices are associated with provincial and local administrations, Punjab government has taken multiple initiatives during last five years and also passed Punjab IT Policy in 2018 to automate governance. The major initiatives include: 1) digitization of all police stations in the province; 2) attendance through biometric verification; 3) deployment of Hospital management information system (HMIS) at district and tehsil level headquarters (DHQ and THQ); 4) supervision of field staff and monitoring of health, agriculture, livestock, irrigation, education, irrigation through mobile phones; 5) Vaccination coverage from 22 percent to 92 percent ; 6) digitization of agricultural land record and use of remote sensing techniques using satellite imagery.

The digital policy further recommended to introduce e-procurement system to renovate the landscape of public procurements, to implement office automation systems as communication platform and e-filing systems. Moreover, the policy also ensured the integration of law and order initiatives such as traffic management, video surveillance and safe cities project. The Punjab IT policy

² Punjab passes its first ever IT policy", Published in MIT Technology review on May 29, 2018. To be retrieved at: <http://www.technologyreview.pk/punjab-set-to-pass-its-first-ever-it-policy/>

2018 further aims to implement some initiatives in years to come which include: provision of trainings on Internet of Things (IoT), setting up regional offices of PITB across the province and provision of free and easily accessible ICT resources to socially vulnerable people in an inclusive manner.

4.2. ICT initiatives in Punjab Police

Punjab police has taken the lead in embracing the new technologies. All the police stations of Punjab have been equipped with ICT infrastructure and personnel. As a major initiative electronic registration of FIR (E-FIR) has been successfully implemented all over the province without exception. All the police station record including daily station diary and progress on investigations has been digitalized and made available online across Punjab. Currently, different online portals, applications and technologies are being used by Punjab police on regular basis to carry out day to day official business including Crime Mapping, Police Station Record Management System, Pakistan Citizen's Portal (Prime Minister Delivery Unit), IGP Complaint Cell, Tenants Registration System, Hotel Eye System, Bio Metric Identification Devices, Online Beat Book, E-Gadget, Anti Vehicle Lifting System, Human Resource Management Information System, Driving License Management System, Police Kidmat Markaz, Police Khidmat Counter DHQ, Welfare Eye, Pukaar (15), Criminal Record Management System, Video Conferencing, Online Video Surveillance of Police Stations, Front Desk and E-FIR. The whole system is integrated and is centrally monitored by the Inspector General of Police (IGP) office or Central Police Office, Lahore.³ Out of all these tools of e-governance, E-FIR and Citizen's Complaint Portal are directly related to the public and service delivery. Therefore, it is most important to study and analyze the performance of these two e-initiatives in detail.

4.2.1. Electronic First Information Report (E-FIR)

The process of investigation against each FIR in terms of recovery and arrest has been a huge challenge in the presence of manually maintained records. Starting from FIR registration to culprit nomination, case proceedings till a case closures, retrieval of FIR requires a lot time and work. Before the advent of E-FIR, 25 registers were maintained by each Police Station that comprised of crime reports, case diaries and FIRs etc. However, electronic First Information Report (E-FIR) launched in March 2017 under smart policing approach has transformed the conventional methods into a modernized policing regime by introducing an online registration mechanism where Police Complaint Center receives complaints through Short Message System (SMS) and voice calls on a short code (8787).⁴ Moreover, latest Android-based smart phones are loaded with various applications for recording and documenting crime. This technology has replaced the traditional pocket notebooks and has connected citizens with central command room. Now the life cycle of FIR i.e. from registration to tracking a FIR has been digitalized. The system automatically generates e-copies of FIR and the reports required at all levels of Punjab Police leadership i.e. from Station House Officers (SHOs) to IGP. Moreover, the process is integrated with Police Human Resource Management Information System, NADRA and Anti Vehicle Lifting System etc. The system has transformed traditional methods and established a new regime of modern policing. The project is operational in all the 714 police stations across Punjab province.⁵ The PITB and the Punjab Police have also replicated this model in Sindh and Gilgit Baltistan. Installation of the same software in Balochistan is in progress. Since its launch 878,000 electronic FIRs have been registered which were 311,895 in 2016.⁶ This shows the acceptability and adaptability of the program.

4.2.2. Front Desk, Complaint Management System (CMS) and Police Station Record Management System (PSRMS)

Front Desks were established in District Gujranwala in 2016 which function as Reception desks in police stations. The complainants approach the Front Desk where the complaint is entered in an e-application creating a permanent record of that complaint ensuring that no application is lost or ignored. That complaint has to be resolved in a stipulated time period by concerned police staff. The high-ups monitor all the entries made at police station level and analyze the public feedback and ratio of complainants satisfied with police performance in resolving their matter. Monitoring of complaints ensures that complaints are being cleared in a timely manner and no complaint is filed without valid or justified reason by investigation officers. Complainants can check the status of their complaints online using particular complaints credentials given to them at the time of entering a complaint. The E-FIR uses a QR code as well which eliminates the fabrication of fake FIRs. All the police station registers are now being maintained in PSRM. E-FIR includes full life cycle of an FIR i.e. from registration of an FIR to suspect details, investigation, case proceedings, recovery and closings all the record is maintained digitally and is available to all supervisory officers online for analysis and reports generation. Therefore, tracking progress of a case is now much easier.

³ Source: Punjab Police Website. To be retrieved at <https://www.punjabpolice.gov.pk/>

⁴ Dogar, A. "Introducing Smart Policing", Published in MIT Technology Review. To be retrieved at: <http://www.technologyreview.pk/introducing-smart-policing/>

⁵ PITB official website. To be retrieved at: <https://pitb.gov.pk/efir>

⁶ PITB official website. To be retrieved at: <https://pitb.gov.pk/efir>

4.2.3. Citizen’s Complaint Portal (IGP Complaint Centre-8787)

One of the initiatives of Punjab Police is the establishment of an integrated IGP Police Complaint Center. Previously the complaints were received through post or a person had to travel to Lahore to submit his complaint in person at the Inspector General of Police office. This initiative aims at receiving complaints through SMS and voice calls on a short code (8787). Moreover, complaints are also received online as well as through emails. A dedicated team of young IT professionals has been deputed to handle these complaints in an expeditious manner. The system is highly interactive and the complainant is kept in the loop till the disposal of the complaint. The complainant can view the progress of his complaint online and can send his feedback at any moment, online or through SMS. Following nature of complaints are entertained at the IGP Complaints Center: 1) Non-Registration of FIRs, 2) Faulty investigations, 3) Illegal detentions, 4) Arrests of innocent persons, 5) Registration of false FIR, 6) Slackness in Duty and 7) Demand of illegal gratification.

All complaints are sent to senior ranking officers for due action and in any case they are not marked to an officer below the rank of a Sub Divisional Police officer, who is bound to call the complainant himself within 8 hours and report to the IGP Complaints center that he has made contact with the complainant. Moreover, these officers have to send their final reports within stipulated timelines. For complaints of Illegal detentions and demand of illegal gratification the replies have to be submitted within 24 hours. Similarly, for complaints of Non-Registration of FIRs and Arrests of innocent persons the replies have to be submitted within 72 hours, and for rest of the types of complaints the reports are to be submitted within two weeks. Replies received from respective offices are cross checked by the staff at Police Complaints Center by making telephonic calls to the complainants. In case of any ambiguity or the complainant has expressed dissatisfaction regarding the reply, the matter is sent to a senior officer for verification. The complaint is not disposed of till it’s either redressed or has proved to be false after verification by a senior officer. So far, 141,521 complaints have been entertained across Punjab, out of them 136,304 have been disposed of.⁷

Table 1: Performance of District Gujranwala - IGP Complaint Cell

IGP Complaint Cell 8787 Gujranwala			
Year	Total Received	Resolved	Pending
2015	786	786	0
2016	954	954	0
2017	544	544	0
2018	502	502	0
2019	523	431	92

(Source: City Police Office Gujranwala, 2019)

5. Results and Discussion

Gujranwala is one of the prominent industrial cities of Pakistan. It is the 5th largest city of the Punjab and 7th amongst the most populous cities of Pakistan with 500,000 workers deployed in different industrial units of the city. Moreover, its share in national production is 9 percent and in revenue, it is 8 percent.⁸ This section undertakes an in-depth analysis regarding the role of E-policing in ensuring law and order condition in Gujranwala and its impact on user satisfaction index, public satisfaction index, trends in crime, service delivery indicators, resolution of public complaints and completion of investigations etc. In this backdrop, the present study analyses the impact of E-FIR and Citizens’ Complaint Portal in terms of service delivery and public satisfaction. The analysis primarily focuses on assessing the impact of E-FIR on police work culture and on assessing the impact of Citizen Complaint Portal in terms of service delivery and public satisfaction and police work culture in 10 sub-divisions of Gujranwala district.

5.1. E-FIR from Complainants’ Perspective

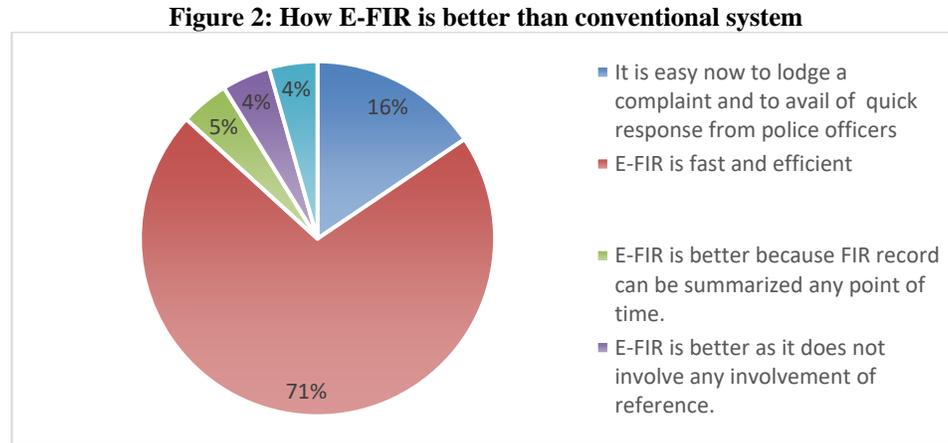
5.1.1. E-FIR vs. Conventional FIR

Tracing the progress of investigation against each FIR and its retrieval at all levels had been strenuous procedure in conventional system. On the contrary, E-FIR is integrated with NADRA, CRO, AVLS and several other IT initiatives. When different applications are sharing data it ensures that record is integrated and away from anomalies. If an E-FIR case file has a proclaim offender credentials mentioned in it, then by integration with other applications, that offender is very easy to track using Hotel Eye, TRS etc. To analyze the progress and prospects of E-FIR, surveyed citizens were asked how they find E-FIR better than conventional system, 71.1% of the citizens responded that current E-FIR system is better as it is fast and efficient. 16% of the citizens were of the view that E-FIR has made it easy now to lodge a complaint and to get quick response from police department. 4.4% of the citizens responded that E-FIR is better as the newly born electronic system does not involve any reference of some third party for FIR registration or resolving of the

⁷ Punjab Police Website accessed on 28.12.2019. Date retrievable at https://www.punjabpolice.gov.pk/igp_complaint_center_8787

⁸ Gujranwala’s role in national economy. Published in Dawn on Aug 17, 2016
<https://www.dawn.com/news/206246>

matter. Another 4.4% of the citizens responded that E-FIR is better because FIR record can be summarized and retrieved at any point of time.



Source: Author's own calculations based on surveyed data

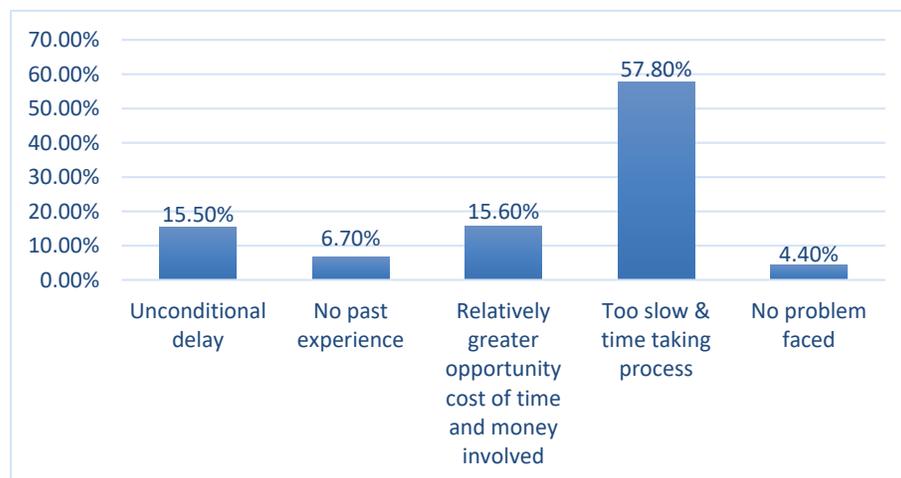
5.1.2. E-FIR and User satisfaction

An important question to be addressed here is the technology absorption and adaptability level of the citizens. Therefore, three different questions were asked from the respondents to determine their satisfaction level which eventually ensures adaptability: 1) When citizens were asked about their computer skills set to see if their low level of computer skills hindered them in using E-FIR, findings revealed that despite either being completely devoid of computer skills (32% of the citizens) or having basic level computer skills (68% of the citizens), none faced any difficulty dealing with electronic system. They reported cooperative behavior of well-educated front desk staff to be the reason behind astonishing results; 2) when the citizens were asked if the time gap between getting FIR registered and action taken on it by department has been reduced, 73.3% of the citizens were of the view that the time gap has been substantially reduced whereas, 22.2% of the citizens responded that although the time gap has been reduced, there is yet a room for improvement and; 3) when citizens were specifically asked if police efficiency has been improved, 78% of the citizens confirmed that the efficiency of police department in Gujranwala has been significantly improved.

5.1.3. Cons of conventional FIR

Prior to E-FIR, the respondents were suffering from unresponsiveness from the department and unnecessary delay in the proceedings. Not only the system was lethargic, there was huge involvement of risk in the form of chronic data misplacement and theft. Moreover, the process of retrieval of information about a specific case also used to require the complainant to personally visit police stations. However, with the advent of E-FIR, the services of police departments can be accessed by making a call on short code "8787" or by texting on the same number. When sampled population was asked about the problems they faced dealing with conventional FIR system, around 58% of the citizens expressed the apprehension that the previous system was too slow and time consuming, 15.50% of the citizens reported unnecessary delays to be the major barrier and 15.6% of the citizens responded that conventional FIR involved relatively greater opportunity cost of time in the form of visiting the police station personally and opportunity cost of money in the form of getting a number of documents photocopied etc. and undergoing through various formalities.

Figure 3: Problems faced by citizens while getting conventional FIR registered



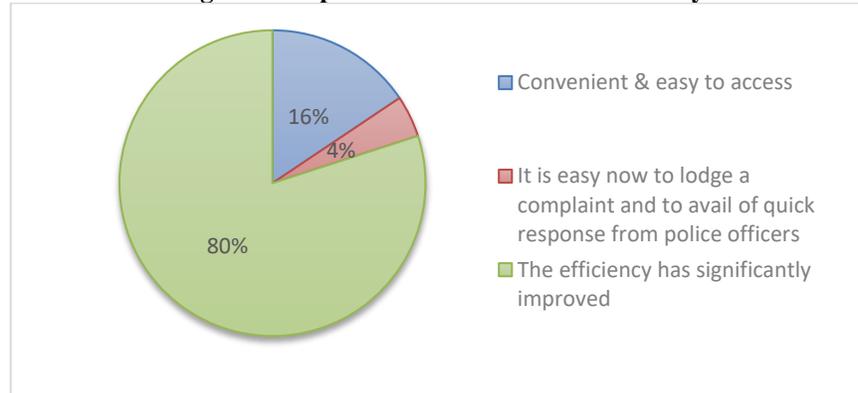
Source: Author's own calculations based on surveyed data

5.2. E-FIR FROM POLICE OFFICERS' PERSPECTIVE

5.2.1. E-FIR & performance of Police department

Surveyed population also comprised of Police officers from different Police stations⁹ of the district. Police officers being the ultimate users of electronic system were asked to evaluate the performance of E-FIR system with the objective to analyze users' satisfaction. 80% of the police officers were of the view that efficiency of the police department has been significantly improved. 15.6% of the officers responded that E-FIR is convenient and easy to access for public. And 4.4% of the officers responded that it has now become relatively easier to lodge a complaint and to get quick response from police officers.

Figure 4: Impact of E-FIR on Police Efficiency



Source: Author's own calculations based on surveyed data

5.2.2. E-Policing & Transparency

Police department relies primarily on information¹⁰ which if available on time may significantly reduce crime rate. E-FIR has a proclaim offender credentials section on it what has made it very easy to track the offender using Hotel Eye, TRS etc. Moreover, the status of the criminal remains recorded permanently in system integrated with NADRA, CRO, AVLS and several other IT initiatives. This helps in timely identification and arrest of accused. 98% of the surveyed police officers were of the view that transparency of the system is one of the major contributors towards the successful implementation of the electronic system i.e. it has made FIR readable not only for complainants but also for high police officers who can directly monitor registered FIRs. Moreover, the copies of E-FIR can also be taken directly from front desk. Screenshot below gives pictorial representation of the online portal to which electronic FIRs and complaints are entered. This system is accessible not only for the police officers of a specific police station but can also be viewed by high police officials at Headquarter Lahore.

5.2.3. E-Policing & Crime Rate

When the police officers were asked the impact of E-policing on crime rate, 80% of the respondents responded that crime rate in the district has been declined. Reduction in crime rate has various socio-economic implications for District Gujranwala as it is the leading industrial city of the Punjab with 9% share in national production is 9 percent and 8% in revenue.¹¹ In such an economically flourishing city, markets take reduction in crime rate is taken as a good news. In this regard, 99% of our respondents confirmed that because of the prevalence of law and order situation, confidence level of markets has also been increased. When the police officers were asked the impact of E-policing on crime rate, 80% of the respondents responded that crime rate in the district has been declined. Reduction in crime rate has various socio-economic implications for District Gujranwala as it is the leading industrial city of the Punjab with 500,000 worker¹² been deployed in different industrial units of the city. Moreover, its share in national production is 9 percent and in revenue, it is 8 percent.¹³ In such an economically flourishing city, markets take reduction in crime rate is taken as a good news. In this regard, 99% of our respondents confirmed that because of the prevalence of law and order situation, confidence level of markets has also been increased.

5.2.4. E-FIR & Challenges Faced By Department

The increase in police efficiency and quick responsiveness of the department comes at the cost of various challenges faced by the department. Around 59% of the police officers have expressed the notion that E-FIR has put an additional burden on the department

⁹ PS Ladhewala Warraich, PS Noshehra Virkan, PS Tatlay Aali, PS Sabzi Mandi, PS Khiali, PS Aroop, PS Civil lines, PS Cantt, PS Ahmad Nagar, PS Sohdra, PS City Wazirabad, PS Satellite town, PS Jinnah Road, PS Eminabad, PS People's colony, PS Kotweli, PS GarJakh, PS Baghban pura, PS Model Town, Dhullay, PS Wahndo, PS Muzaffar Gharh, PS Waniky Tarar, PS Gakhar, PS Nidhoki and PS B Division SKP.

¹⁰ Information that Police department relies on is of three types: 1) police information (primary, secondary and tertiary), 2) intelligence (prospective, retrospective and applied) and 3) operational strategies (preventive, prospective and reactive) each of which interacts to decode, encode, process and obtain information (Manning, 1992).

¹¹ Ibid

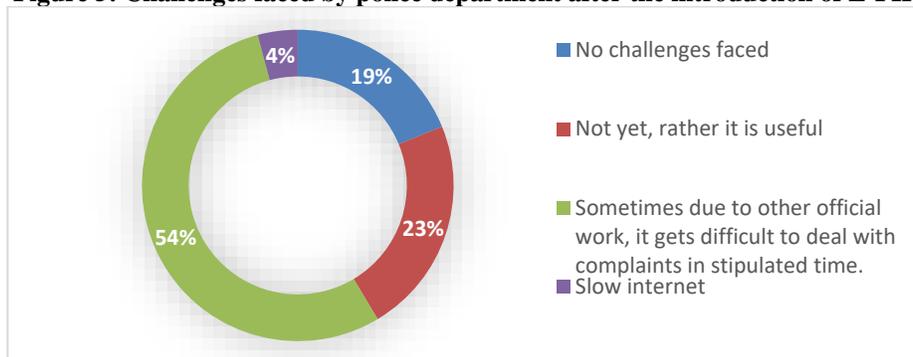
¹² Gujranwala's role in national economy. Published in Dawn on Aug 17, 2016

<https://www.dawn.com/news/206246>

¹³ Ibid

by making them alert and active 24/7. They reported that e-policing has made dealing with registered complaints/FIR a time bound procedure for police officers which does not allow them to make any delay in the proceedings. Slow internet is also considered the major challenge that hampers the connectivity of the police department with online portal thereby paralyzing the police efficiency. However, 23% of the officers responded that they find the system rather useful, 19% of the officers responded that they have not faced any challenge so far. Figure 12 shows the response by police officers when asked if E-FIR has made them deal with challenges.

Figure 5: Challenges faced by police department after the introduction of E-FIR



Source: Author's own calculations based on surveyed data

5.3. Citizen's Complaint Portal from Complainants' Perspective

5.3.1. Citizens' Complaint Portal Vs. Conventional System

Citizens' Complaint Portal is another online integrated citizen grievance redressal system connecting all government organizations both at Federal and Provincial levels integrating the IGP Complaint Cell 8787, Chief Minister Complaint Cell and Prime Minister Complaint Portal. Citizens' Complaint Portal is equipped with the facility to receive complaints from all over Punjab through: 1) telephonic call on short code "8787"; 2) SMS on 8787; 3) Punjab Police website 4) email; 5) in person and; 6) by post. Moreover, the complainants can check the status of their complaints online using particular complaints credentials given to them at the time of entering a complaint.

Under the light of these initiatives, the surveyed citizens were asked if they find Citizen's Complaint Portal any better in order to determine the adaptability level by them. Our findings reveal that 61.5% of the citizens consider Citizen's Complaint Portal to be better, faster and more efficient compared with conventional system. 17.1% of the citizens responded that it is easy now to lodge a complaint without personally visiting police station and to get quick response from the department. 7.7% of the respondents responded that CCP is better because complaint record can be summarized any point of time and has minimum risk of data misplacement. 3.8% of the complainants responded that CCP is better as it does not involve any involvement of reference or third party. Another 3.8% of the respondents responded that CCP has ensured transparency by digitizing the system.

Table 2: Citizen Complaint Portal vs. Conventional system

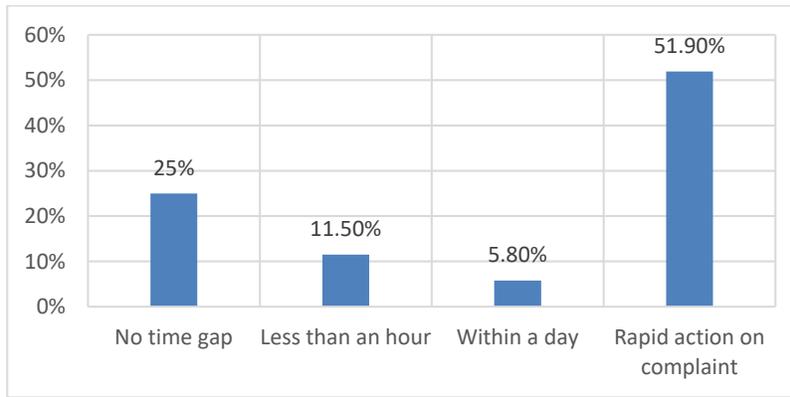
Response	Percentage of respondents
CCP is less time consuming, quick and get effective response	17.1%
CCP is fast and efficient	61.5%
CCP is better because complaint record can be summarized at any point of time and has minimum risk of data misplacement	7.7%
CCP does not involve any involvement of reference	3.8%
CCP has ensured transparency	3.8%
Total	100%

Source: Author's own calculations based on surveyed data

5.3.2. Citizen's complaint portal and user satisfaction

In the light of this massive accountability system, surveyed citizens were asked two different questions to determine their satisfaction level: 1) When asked about how has CCP addressed their matter, 94% of the citizens expressed that their complaints were addressed in a way more efficient than conventional methods of complaint addressal and; 2) when asked about the effect of e-services on time gap between the lodging a complaint lodging and its addressal, around 60% of the respondents surveyed citizens responded that the time gap has been substantially reduced and rapid action was taken against their complaint, 25% of the citizens responded that their complaint was addressed within no time, 11.5% of the citizens responded that their complaint was addressed within an hour whereas, around 6% of the citizens claimed to have their complaints addressed within a day. This confirms not only the improvement in police efficiency but also in public satisfaction.

Figure 6: time gap between complaint lodging and action taken

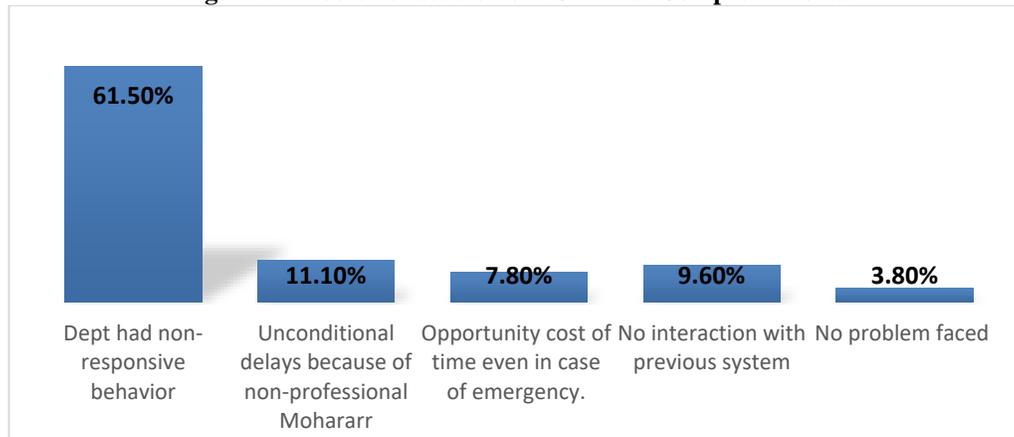


Source: Author's own calculations based on surveyed data

5.3.3. Problems faced by citizens before CCP

As far as the problems that citizens were facing prior to the advent of Citizen Complaint Portal are concerned, 61.5% of the citizens expressed the apprehension that the department had non-responsive behavior previously. However, they claimed to have observed it changing gradually after the introduction of online portal. 11.1% of the citizens responded that prior to front desk system, they used to suffer from unconditional delays due to the lethargic behavior of Mohararr whereas, around 6% of the citizens responded that previous system involved greater opportunity cost of time.

Figure 7: Problems faced before Citizens' Complaint Portal



Source: Author's own calculations based on surveyed data

5.4. CCP from Police Officers' Perspective

5.4.1. CCP's performance and users' satisfaction

When the surveyed police officers were asked to evaluate the impact of digitization on police efficiency, 74% of the police officers expressed that since the responsiveness of the department has been improved, the system has become faster. 10% of the officers responded that the portal has helped the department in maintaining permanent record with no risk of chronic data misplacement. Another 10% of the officers responded that it is convenient to read and access the complaint through e-tag issued by department after receiving applications and 4% of the officers responded that the system has paved path for quick disposal of complaints.

Table 3: Impact of digitization on police efficiency

Response	Percentage of respondents
Easy to lodge a complaint, no photocopy required (money & time saved), no reference needed	2%
Faster system, rapid action, source feedback, check on police	74%
It is convenient to read the complaint and access the system through e-tags	10%
Permanent record, no chronic misplacement of data, senior officers directly monitor the progress	10%
Quick disposal of complaints	4%
Total	100%

Source: Author's own calculations based on surveyed data

6. CONCLUSION

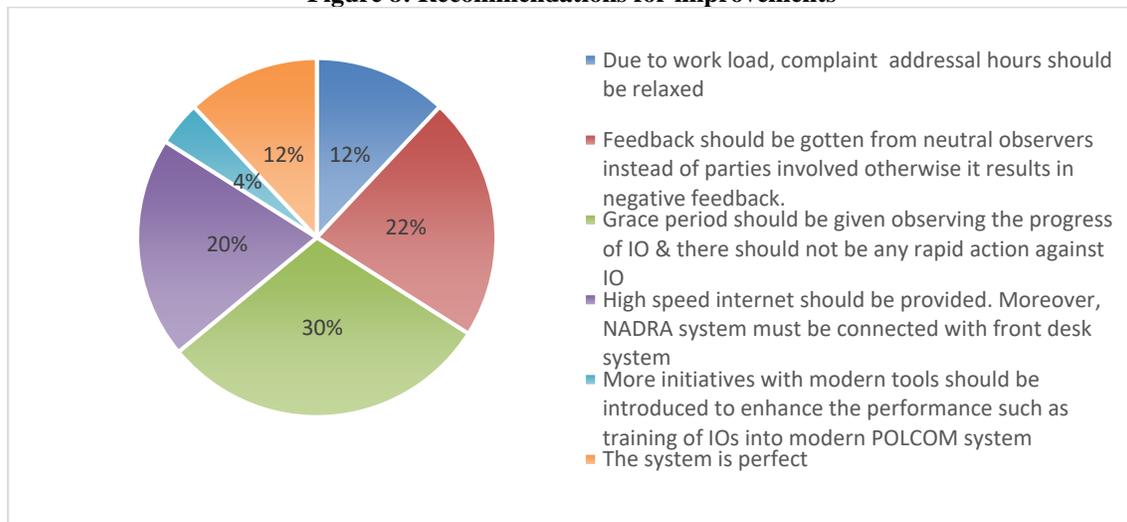
The term e-governance is defined as the process of adapting information and communication technology as a tool for digitizing and automating internal operations of government and facilitating its external interactions i.e. with citizens and agencies (OECD, 2009). Digitization of these operations not only improves the efficacy by reducing the overhead costs but also by minimizing the expected time required for proceedings. It is relatively a new branch within the field of information systems and economies around the globe have launched various projects targeting the provision of electronic services to the citizens. (Patel & Jacobson, 2015). The success of e-government depends much on how an economy works and how the information related to the changes within the government body flow to the citizens. E-government is more about transforming government so that it can become more citizen-centric. Information technology is playing a very important role in the life of people all over the world and is changing the life of people and changing the rules of business. E-government has been one such area whereby government is using Information and communication technologies (ICTs) to provide speedy and efficient services to people at large. Although the aim of e-government is to enrich the lives of citizens, business, employees and other agencies the journey is not smooth and without obstacles. Obstacles like citizen awareness about e-services, and shortage of skilled and technical workers in this direction poses major obstacles towards e-government in developing economies. Also the complexity in e-government program is very wide and this poses major challenges before the government machinery to implement on a larger scale.

Information and Communication Technology (ICT) is believed to have brought positive changes in the efficiency of police department. The implementation and adoption of innovative technology is assisting to fight against criminal violence, terrorism and has made the process of filing complaints quicker and easier in district Gujranwala. Not only has it exerted a significant impact on the efficiency of police department but the prevalence of law and order condition has also declined the crime rate which in turn has increased market level confidence in the district thereby contributing to make Gujranwala a prominent industrial hub and economically stable district.

7. POLICY RECOMMENDATIONS

It is important to note the recommendations given by police officers for the better functioning of the department. 30% of the challenges ridden officers recommended that grace period should be given observing the progress of IO & there should not be any rapid action against IO. 20% of the respondents responded that high speed internet should be provided as slow internet has tendency to completely paralyze police efficiency. Moreover, the officers also stressed that front desk should be integrated with NADRA system to make the functioning of the system more efficient and reliable. 22% of the respondents recommended that feedback should be gotten from neutral observers instead of parties involved in a criminal or civil activity otherwise it would result in negative feedback. 12% of the officers recommended that due to work load, sometime it gets difficult to address complaints in stipulated time therefore, complaint addressal hours should be relaxed. 4% of the officers recommended that more initiatives with modern tools should be introduced to enhance the performance of the department such as training of IOs into modern POLCOM system.

Figure 8: Recommendations for improvements



Source: Author's own calculations based on surveyed data

Apart from these, the effectiveness and efficiency of police department can also be enhanced by improving police-public relation. In this regard, the role of media cannot be neglected. One such attempt is to broadcast police activities in the community and also to

reporting district and provincial level news on local television channels. Moreover, psychological response and organizational reactions of implementing ICT in police department cannot be neglected if we want to improve the performance of police department otherwise, this extraordinary development rate of IT can make the economies suffer from additional costs. Therefore, the police department and IT policy makers should collaborate for better outcomes.

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