E-governance as a Roadmap to Good Governance: A Digital Punjab Perspective

1Ume Laila, 2Najma Sadiq, 3Tahir Mehmood, 4Muhammad Farhan Fiaz

1Assistant Professor, Government & Public Policy, School of Social Sciences and Humanities (S3H), National University of Sciences and Technology (NUST), Islamabad, Pakistan, dr.umelaila@s3h.nust.edu.pk
2Assistant Professor, Head of the Department, Department of Mass Communication, School of Social Sciences and Humanities (S3H), National University of Sciences and Technology (NUST), Islamabad, Pakistan, najma.sadiq@s3h.nust.edu.pk
3Assistant Professor, Department of Communication studies, Bahauddin Zakariya University, Multan, Pakistan, tahirmahmood@bzu.edu.pk
4Visiting Faculty, School of Social Sciences and Humanities (S3H), National University of Sciences and Technology (NUST), Islamabad, Pakistan, farhankdi9@gmail.com

ARTICLE DETAILS

ABSTRACT

A new wave of technology hit at the turn of millennium which inspired millions around the world to utilize information technology in their daily lives. Governments have also started taking technological initiatives, as it makes their processes cost and time efficient – but the question remains, does e-governance make the government activities transparent as well? What is the level of accountability in the e-governance mechanism? Innovations in the government processes are flowing easily after the advent of e-governance. Even though there is a huge digital divide between the rural and urban areas of Pakistan, which consequently translates into slower implementation of technological services, in backward areas, the Punjab Information and Technology boards is taking leaps in delivering the public service which spans but is not limited to the health, education and law and order sectors.

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Keywords

JEL Classification
G1, G14, L5, L25

1. Introduction

Technological leaps have made revolutionary advancements in the past decade. This not only impacts the business world, but also have brought tremendous changes to the lives of every individual, by making them more well-informed of their surroundings and especially their governments. Due to advancements in technology, knowledge is widespread, and citizens have prompted closer ties with both legislature and administration – which has stimulated a dynamic system known as e-Government. Information and Communication Technology (ICT) has enhanced the lives of people, especially those in the developing countries (Jaeger & Thompson, 2003). E-governance can enrich the processes of government at all levels including healthcare, education, law and order, and business.

Good governance is the mechanism through which political, economic and administrative affairs of the country are
managed at all levels. The process of governance can be enhanced by ICT as it connects people, businesses and governments efficiently. The objectives of good governance can be synchronized with e-governance to achieve optimum results. ICT can be used as a vital tool to connect citizens to important stakeholders of the government in both developed and developing countries (Haque, et al., 2014).

Pakistan, as many developing countries has a relatively low implementation and adoption of online services in the government sector due to the lack of trust in the internet-based services, digital divide and less awareness (Ali, et al., 2018). For this purpose, the Punjab government has taken numerous steps, starting almost two decades ago, the impact of which can be observed today.

Punjab Information Technology Board (PITB) was established in 1999, and at the same time merged with the IT department of Punjab. This led to a consolidated organization which could take on all IT initiatives under one roof. PITB works in different social sectors in the province, including Healthcare, Education, Law and Order and Municipality Services. PITB claims that their procedures have gained international recognition and the IT enabled solutions have enhanced accountability, transparency, efficiency and effectiveness across the province, especially at grassroots level.

Through Digital Punjab, PITB has enhanced public services with the help of technology and completed more than 270 IT projects during 2012-2017, with employees reaching a score of 1,000. PITB has assisted other provincial governments as well as foreign governments. Moreover, PITB has been the pioneer in establishing Pakistan’s public sector start-up incubator, which has facilitated the growth of a number of start-ups and has inspired private sector incubators as well.

This paper includes a brief overview of the enhanced e-governance infrastructure and practices in the Province of Punjab through PITB, and provides an analysis of how certain aspects of good governance are impacted by e-governance through a model inspired from (Heeks, 2001). The paper concludes with whether e-governance is the roadmap to good governance in Punjab, or otherwise. Furthermore, the limitations to e-governance system are also identified in a developing country.

2. Objective of the Study
The main objective of this paper is to analyze whether certain components of good governance are achieved through incorporation of e-governance in different sectors of Punjab. The investigation will entail an impact of Digital Punjab.

To attain this objective, this paper attempts to answer the following research questions:
1. Has the implementation of e-governance through Digital Punjab ensured accountability and transparency in the province?
2. Has e-governance systems through Digital Punjab ensure effectiveness and efficiency in the government working?

3. Literature Review
E-governance or electronic governance is the use of information and communication technologies (ICTs) for enhancing governance at different levels of government and the public sector (Dre’ze & Sen, 2015). E-Governance enhances the productivity and viability of the government. In addition to electronic administrations, e-governance also refers to the innovations in data and enhancements of procedures to strengthen government communication with the citizens (Butt, et al., 2019).

Numerous studies have been carried out to evaluate the impact of e-governance on good-governance since the advent of Information and communication technologies. In 2001, Richard Heeks overviewed the impact of ICT on good governance objectives, and outlined three main contributions of e-governance in his paper, which are: 1. E-administration (improving government processes), 2. E-citizens and e-services (connecting citizens), and 3. E-society (building external interactions). Heeks observed that many e-governance initiatives failed due to lack of readiness regarding ICTs among citizens and the design-reality gaps. Since the key to good governance is for information to be widespread and accessible, Heeks has elaborated that ICT is an essential ingredient in achieving good governance. He
further argues that e-governance is using ICTs as servants to master good governance (Heeks, 2001). E-governance makes it incumbent upon a government to introduce innovative to deliver public service. Governments all over the world are aiming to achieve good governance components through e-governance, which needs major reforms in the government organization (Ciborra & Navarra, 2005). E-governance aims to achieve transparency, accountability, efficiency and effectiveness, which are the underlying theme of good governance as well. In this digital age, for good governance and e-governance to be achieved, both have to go hand in hand. As the advancements of ICT improved, many countries conducted research to analyze whether e-governance was improving their overall performance. In almost each case, it was deduced that with the help of enabling the human resources with skills of the new onset, good governance components were achieved (Haque, et al., 2014).

Governments worldwide are grasping an administration framework which is electronic in nature. Each nation whether developed or developing, rich or poor are operating electronic structure intending to stream data for its stakeholders. The main focus of e-governance is to enhance the capacity of all individuals to receive knowledge and to improve the proficiency and viability of various types of government organizations (Arfeen & Khan, 2009). By gaining optimism in internal and external communication of a government organization, ICT achieves speed, precision and simplicity of processes. ICT provides a safe transition between the government and its stakeholders (Ahmed, 2018).

Traditional methods of governance provided space for forgery; the systems were slow and inefficient due to the pace at which they worked. For this reason, the trust upon government among common man was very low. ICT has provided efficient and effective ways for the public services to be delivered, and has created mechanisms through which common man can approach the government organizations with a few clicks (Subramanian, 2012). The emergence of a knowledge society based on ICT has improved the nature of governance. The proper functioning of democracy can only be achieved if public services are accessible to all, at all times, without any discrimination (Kalsi & Kiran, 2015). (Bala & Verma, 2018) after an extensive study on the e-governance projects in India conclude, that e-governance indeed is a key to good governance, given that proper planning and infrastructure is in place for the projects to be deemed successful.

The Ministry of Information Technology is the national focal Ministry and enabling arm of the Government of Pakistan for planning, coordinating and directing efforts to initiate and launch Information Technology and Telecommunications programs and projects aimed at the economic development of the country. In October 2002, the Electronic Government Directorate (EGD) was established in pursuance to a decision of the federal cabinet. EGD is a dedicated wing of Ministry of Information responsible for two types of services i.e; 1) In-house software development and 2) Advisory Services. NADRA has also introduced Smart ID Cards that contain 36 Security Features and it would help the holders of the cards access to easily available transactions and other services.

Pakistan Software Export Board is an apex Government body mandated to promote Pakistan’s IT Industry in the local and International markets. PSEB facilitates the IT industry through a series of projects and programs in development and promotion of Innovation and technologies. PITB in collaboration with Planning and Development Department of Punjab are providing Cloud Computing, Tier III standard Data Centre, IT infrastructure deployment and optimization, Centralized Service Desk, Citizen Contact Centre, improving online presence of the government of Punjab, Province wide connectivity, Arfa Software Technology PARK, Identity Management, Consulting, Microsoft licenses and product testing labs. Citizen Feedback model is another initiative to ensure transparency.

E-governance is a relatively newer concept for the developing countries, which is justified by the digital divide in the society, and hence becomes a complex procedure to implement as the citizens still lack trust and skills to be facilitated by ICT (Qaisar & Khan, 2010).

E-governance all over the globe, and especially in Asian developing countries have had a positive relation to the components of good governance, such as provision of better governmental performance, which subsequently impacts in better accountability and better transparency. E-governance also tends to lower costs regarding infrastructure and provide flexibility and more services in a short period of time, which ensures efficiency (Malik, et al., 2016). Pakistan has developed a very clear and strategic e-government policies, but due to major shortcomings like energy shortfall
and lack of infrastructure, service delivery is impacted extensively.
An Indonesian study suggests that e-governance and good governance are correlated; to achieve the components of
good governance e-governance is necessary in the modern age, and to fulfill the demands of e-governance, the
principles of good governance should be established (Suhardi, et al., 2015).

4. Theoretical Framework
Good governance is the underlying current of how power is exercised in a country, and its scope reaches out to
institutions, traditions and processes. Good governance is achieved when the resources are allocated efficiently to the
citizens, the authorities are transparent in their process, and accountable for their actions. Good governance promotes
the interests of the citizens and makes policies according to them. The principles of good governance strengthen
institutions and provides basic services including healthcare, education and rule of law.

This research focusses on the efficiency and effectiveness, and transparency and accountability aspect of good
governance, in three major service delivery areas identified in Digital Punjab. This is a qualitative research which
analyzes the impact of incorporation of e-governance on good governance in Punjab. The model is developed with
inspiration from Heeks E-Gep model (Heeks, 2001), where indicators and sample measures for service delivery
sectors are identified. The study analyzes the impact of e-governance on good governance through secondary data,
and latest research done in each service delivery sector in Punjab.

The components of governance are identified which are used to verify the impact of e-governance in the following
table:

<table>
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<tr>
<th>Service Delivery Sectors</th>
<th>Good Governance Indicators</th>
<th>Sample Measures</th>
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| Education                | Efficiency and Effectiveness; Transparency and Accountability | Attendance of teachers and students 
Fair examination system 
Online admission system |
| Health                   | Efficiency and Effectiveness; Transparency and Accountability | Attendance and performance of field workers and health facilities 
Availability of data and early warning system for diseases 
Access and assurance of quality drugs |
| Law and Order            |                           | Electronic registration, tracking process, record-keeping of criminals 
Accessible complaint/ efficient recovery system |

5. Service Delivery Improvements in each Identified Sector
5.1 Education
The Punjab Information Technology Board has worked closely with the School Education Department of Punjab, to
assist the latter in developing ICTs based system. Through the help of ICTs the school department is able to make
well-informed and timely decisions which are based on facts and figures. PITB has enabled the schools to monitor
students Learning outcomes, automation of examination system and admissions, and providing real-time monitoring
of public schools (Digital Punjab, 2017).

Information Technology was introduced to education sector in Punjab in 2011. PITB has enabled the education
department in Punjab to acquire real-time data, to ensure performance of schools and teachers’ presence (Waqar &
Bokhari, 2017). To ensure the presence of both students and teachers, the education department has digitized attendance system. All the schools are regularly monitored and the report is entered into a centralized server, which ensures effectiveness and accountability from the faculty of each school.

E-learning is another initiative taken by the Punjab School education department, which provides digitized textbooks and tablet-PCs to teachers. This initiative has transformed the education system of the province, since students are taught with creative and new techniques, and tested on the Intelligent Tutoring System which is a unique application to individually cater each student.

For the purpose of improving education through monitoring and evaluation, many initiatives have been taken by the Secondary Education Department in collaboration with the Punjab Information Technology Board. These initiatives are regularly monitored by a centralized system, gathers feedback and makes improvements in the system based on real-time data. These initiatives have helped improve the transparency regarding education system in Pakistan. Some of them have been evaluated below:

5.2 Smart Monitoring
For any initiative to be successful, the effective implementation of its monitoring scheme is crucial. The Punjab Information Technology Board has developed a monitoring mechanism called ‘smart monitoring’ in 36 districts of the Punjab Province to improve the condition of schools (MAHMOOD, 2015). The new monitoring strategy has set target performances for teachers and students, and with the help of geo-tagging of the visited sites, real-time pictorial evidence reporting and the automated SMS alert for schools with low targets achieved. All of these indicators are monitored in a centralized database which ensures informed decision-making and trend analysis.

The School Education department upon the directions of Government of Punjab employed over 950 Monitoring and Evaluation Officers for fieldwork and real-time survey. These field officers are responsible for reporting key statistics of students and teachers’ presence, increase and decrease trend of student enrollment and the availability of utilities across 52,695 schools across the province. The Monitoring and Evaluation Officers are regularly shuffled and reassigned different schools for monitoring visits to avoid any form of bias and promote fair reporting. The Program Monitoring Implementation Unit (PMIU) is responsible for the oversight of these field officers and ensures their adherence to the schedules assigned.

This effective monitoring mechanism has ensured positive results in the Education sector of Punjab Province. Students enrollment has increased along with the presence of teachers in class-rooms. The concept of ghost schools, teachers and students have reduced and all schools have the basic utilities updated in them.

5.3 Literacy and Numeracy Drive
The Punjab Information Technology Board took another initiative to eliminate ghost schools and register both teachers and students by verifying them through their Computerized National Identity Card Number in the NADRA Database. This initiative was called the Literacy and Numeracy Drive and it was implemented through the already recruited Monitoring and Evaluation Officers, who were responsible for field visits to schools across the province for real-time data collection. This initiative was taken to ensure the quality of teaching and learning by eliminating ghost-concept in the education system.

Only a few developed countries have been able to achieve the implementation of this mechanism and it is a huge step forward for Government of Punjab to be able to implement this project on such low-costs. The student assessment application is created, linked with a wide question bank that is then tagged with the relevant student outcome. This application is used by the field officers during their monthly visits to collect real-time data, conducting quality assurance of teaching and learning, as well as recording the missing facilities such as washrooms, boundary walls, electricity and water at schools. These missing facilities were identified and then subsequently improved.

Through this drive 329,000 students are assessed monthly and the data is shared on real-time basis with the administrators through an online SMS-alert system or dashboard. Many schools lagging in providing quality
education have been identified and their performance has been improved (Ishaq, et al., 2019).

5.4 E.Learn
The e.learn is an initiative of the Punjab Information Technology Board, which is specifically designed for teachers. The aim of this initiative is to train teachers in enhancing their classroom activities skills using information technology. Teachers will be equipped with the technical skills of using simulation and engaging video content in classrooms for better learning outcomes (Dubash & Jamal, 2018). The program started as a pilot experiment in 30 government schools of three cities in Punjab, namely Rawalpindi, Multan and Lahore.

Under this initiative, teachers are provided with tablets while television sets are installed in classrooms (Waqar & Bokhari, 2017). The teachers are trained to deliver according to the instructional content available on the tablets. Moreover, a learning management system is developed for each class.

A major hindrance to incorporating education with information technology was load shedding and the unavailability of electricity in schools during the day. The e.learn initiative has also taken steps to provide backup electricity system to schools in order to ensure a smooth interactive learning process. Moreover, an SMS based tutoring system has been introduced through which students can share their queries with teachers after school timing.

This entire mechanism is regularly monitored and on the basis of real-time data, constant improvements are being made as suggested by the concerned stakeholders. The Punjab Information Technology Board through their initiatives have not only improved the quality of education in Punjab but have also ensured that the transparency in the educational system in maintained by incorporating information technology with the traditional methods of teaching and learning. After the 18th Amendment, education has been devolved to provinces. Such state-of-the-art initiatives will create a competition among the provinces to improve their education system as well, and take advantage of the information technology.

5.5 Health
In collaboration with PITB, the Health department of Punjab has been updated with regards to ICTs. It was the first sector that used the expertise of PITB (Zareen, 2016). The reporting system and efficient data acquisition system has been implemented across the province. PITB has enabled the Health department to establish a tracking system for infectious diseases such as dengue and others including polio etc. Several procedures including attendance for health facilities, drug inspection, drug testing and cleanliness systems have been automated (Digital Punjab, 2017).

Automation in the Health sector started in 2012 in Punjab. An information management system based on mobile phones was initiated as a pilot project in one district, and later extended to 18 more districts after its success. Health reports in each district were uploaded through this mechanism to be monitored, which resulted in reduction in absenteeism to a greater extent. The data regarding medical stock outs, and service delivery through functionality of equipment were regularly updated. An external monitoring system was established so that accountability and transparency could be deemed unbiased (Qazi, et al., 2016).

In the Health sector, tremendous changes have been seen since the advent of ICTs improving transparency and ensuring presence of health facilitators across province. The developed applications have ensured efficiency and effectiveness as well. After the worst outbreak of a nation-wide epidemic in form of dengue fever, the Punjab Province took an initiative in incorporating the Information and Communication Technology with Health sector of the province. They turned towards mHealth and developed android-based applications for communicable diseases after the success of controlling dengue fever in Punjab through this application.

5.6 M-Health
Mobile Health or mHealth is a newer concept which has emerged as a result of the incorporation of information and communication technology with the Health department in different countries. It entails the use of cellular devices such as mobile phones, wireless devices, personal digital assistants and patient monitoring devices for the purpose of public and medical health practices. mHealth is the use of the technologically advanced devices for the purpose of
widespread healthcare (Burney, et al., 2013).

Pakistan is the 6th most populous country with a poor health infrastructure which makes it challenging for the government to provide healthcare in backward rural areas. The incorporation of Information and communication Technology with the Health has provided an opportunity for the government to have a widespread reach regarding provision of healthcare.

The Punjab Information Technology Board has taken lead in launching various mHealth applications, which has boosted the use of ICT in the public sector regarding health more than the private sector in Punjab. These mHealth applications are prepared after a widespread research, including consultation from all stakeholders from health department as well as environmental inspectors. When a mock-up of the mobile app is ready, it is tested by field officers before being used by health professionals. Among the creation of many applications, the Punjab Information Technology Board ensured creation for applications specific to the monitoring mechanism of health professionals which surveyed and monitored performance, absenteeism and quality of work. Some of these applications that strengthen the monitoring system and subsequently ensures transparency are mentioned below:

5.7 Integrated Reproductive Maternal New-born Child Health and Nutrition Program
This program was launched for the purpose of increasing the maternal health, child health and access to reproductive health. An extensive network of 1850 Lady Heath Supervisors (LHSs) with 46000 Lady Health Workers (LHWs) are working in the entire province to provide preventive, curative and rehabilitative services along with the promotion and awareness drives. The program has been able to achieve improved Child health especially relating to diarrhea through ORS and zinc. Moreover, improvements in skilled birth attendance, contraceptive prevalence rate, complete immunization program and institutionalized deliveries have been ensured. This program has been extended to both rural and urban areas to strengthen the health facilitation system at grassroots levels (Integrated Reproductive Maternal Newborn Child Health and Nutrition Program, 2020).

The major highlight regarding the assurance of good governance through e-governance is the development of monitoring mechanism which inculcates a performance-based incentive initiation and an accountability system. E-monitoring and e-reporting is conducted on regular basis to ensure transparency.

5.8 Lady Health Supervisor (LHS) Android App
The LHS Android application was essentially established to monitor the performance and attendance of Lady Health Supervisors, who are further responsible for direction Lady Health Workers. The application requires daily attendance of the Lady Health supervisors, along with the reports of Lady Health Workers, mentoring and verification of the LHWs house. This application ensures that all relevant stakeholders are monitored through a centralized system, and hold the responsible officials accountable.

5.9 Delivery Reporting
An SMS-based delivery reporting has been established which tracks all the daily cases on a central dashboard, and can be accessed by the relevant persons by just sending a text message to the designated code 9697.

5.10 Hospital Watch
The Punjab Province has prioritized Healthcare system and has a widespread network of hospitals including 3500 primary healthcare facilities, 115 secondary healthcare hospitals and 17 tertiary care hospitals, but even so being the most populous province, these healthcare facilities are not able to cater to a large number of populations. It has come to view that the primary reason for this lack of facilitation is the absence of health professionals due to no check and balance on their performance/ attendance. To cater to this problem the application “Health Watch” was launched in 2015 to enable the tracking and reporting of health professionals’ attendance and performance (Digital Punjab, 2017).

This application is administered and monitored by members of the Provincial Assembly, District Coordination Officers, Assistant Commissioners, Executive District Officers Health, Medical Superintendents and Director General Health Office, who are responsible for the oversight of Pediatrics, Obstetrics and Gynecology and emergency wards.
in 101 Tehsil Head Quarters and 21 District Head Quarters. All the relevant authorities that have access to this application are given training regarding the app and the Medical Superintendent of each hospital is required to submit a report at least 20 days per month.

A positive impact of this application has been seen in the following years after it was launched, since the attendance, utility and medication are monitored and patient’s perception regarding their treatment is recorded. Doctors’ and other health professionals’ attendance is ensured which has uplifted the morale of the masses to visit public hospitals regardless of their social and economic status. The patient’s data and doctor’s performance are recorded in real-time and analyzed regularly.

5.11 Law and Order
PITB has efficiently incorporated the use of ICTs in Punjab Police. Developing a role model for the rest of the provinces, and even for other developing countries, PITB has played an instrumental role in reforming the Punjab Police. According to the Digital Punjab report, PITB has worked extensively to reform the law and order situation in Punjab, which includes launching of Electronic FIR; introduction an HR Management Information system, Management Information system and Criminal Record Management system; computerization of the police stations; launching criminal identifier, IG Khuli Kachehri, Hotel Eye, and Crime Mapping; reformed the registration systems for vehicles and citizens, etc. All of these have a widespread impact on the security aspect inside the province. The Police organization which was once considered sluggish and corrupt now stands transformed with the help of ICTs (Digital Punjab, 2017).

A recent research study confirms the impact of PITB in law and order of the province, stating that Punjab Police has been enabled with a mobile app through which citizens can report a crime in real time and using multimedia. For the convenience of the general public, the app is also available in Urdu language. The project is still in development stages as it is only available in the capital city of Lahore, but it has many features to identify crime patterns and offenders in certain areas. The project is efficient and can be multiplied in the rest of the province as well. The Punjab Police has also been able to launch a centralized operation center to interact more efficiently with citizens. Complaints can be sent through SMS or email and timely feedback is made available and ensured. The Punjab justice system has given a special priority to women by launching a helpline to provide instant relief to women dealing with violence or harassment (Maqsood, et al., 2019).

PITB has proven immense improvements in the performance of Punjab Police and the Prison department. The tracking system of criminals has been updated, through which they can be identified quickly as well. Moreover, the police stations are approachable, unlike in the traditional setup. Electronic complaint systems have improved the monitoring of complaints being filed, and the mechanism involves holding the Police Force accountable for each complaint. Some of the major initiatives with respect to law and order, which ensures the accountability of the relevant departments are discussed below:

5.12 Computerization of Police Stations
The first step in any law and order situation is filing a complaint, in every case, ranging from loss of important documents to theft, etc. The first point of intimation with the law enforcement agencies is the police station. In the past, police stations have been considered an unwelcoming and enigmatic platform, which the common citizens, especially women could not approach. Moreover, there was no mechanism for follow-up of any complaint lodged, and the police stations did not keep record of the total number of complaints. To amend this the Punjab Information Technology Board developed a web-based complaint management system. For this purpose, a front desk at each police station has been placed to enter the details of the complaint into the system. The complainants are provided with a complaint number through SMS which can be tracked for checking status. Designated police officials are given access to a dashboard through which they can monitor the progress of each complaint. An increasing trend has been seen in the number of complaints registered and resolved with daily monitoring mechanism (PITB, 2020).

5.13 Electronic FIR
Traditionally FIRs were registered manually, and the process that started after that required an immense amount of manual work, as the FIR went through several stages – nomination of suspect, proceedings of case and closure, etc. –
which produced a pile of paperwork, that went through all levels of leadership for the purpose of investigation. This tedious process made the tracking process of specific FIRs very difficult – monitoring the FIRs and concluding the progress of each police station unheard of. It was essential to develop an automated mechanism to solve this problem, which was catered to by the Punjab Information Technology Board with the launch of Electronic FIR. The automated system of FIR includes the entire process of FRI through to the closure of the case. These electronic reports are shared with all relevant stakeholders to streamline the legal procedure, which increases the efficiency of the police stations and elimination of manual work. A significant increase in the number of FIRs registered were seen in 2017 after its launch in Punjab Province (PITB, n.d.).

5.14 Criminal Record Management System
The Punjab Information Technology Board relieved the Punjab police of the tedious and manual work regarding the record keeping of criminals. Since previously, no comprehensive mechanism was present to identify criminals, and required immense manual work which usually ended up being inaccurate as well. This electronic criminal record management system was launched to digitize all criminal data, which is accessible from a central database to all relevant officials. This system has also eased the issuance of character certificates to all citizens, as the relevant officials can check the criminal background of any individual by just entering their National Identity Card number. Complete criminal records can be retrieved with either through CNIC numbers or latent or live finger prints. The criminal record verification can be retrieved in real-time through SMS, or on web through smartphones and PCs. The CRMS has the capacity of matching 20 million fingerprints per second (PITB, 2020).

The digitization of criminal record system has not only streamlined the data of criminals across all police stations of Punjab but also made the performance of police stations more efficient in their work. The identification of criminals has become easier through the CNIC numbers and fingerprints which is linked with NADRA and other law enforcement stakeholders to streamline the records.

5.15 Punjab Police HRMIS
The Punjab Information Technology Board has launched an application particular to the employees of Punjab Police. The major cause of low performance of police was linked with absenteeism and illogical transfers of police officials to various districts on an irregular basis. This automated system has ensured that such tampering in official personal file of each police official is hindered and all the information is available and accessible online. This initiative has also resolved the issue of fake hiring and postings, and all official proceedings regarding employees is carried out through a proper channel and against the set criteria. The SOPs in transfer and posting has been streamlined through the HRMIS, and absenteeism has been decreased (PITB, 2020).

5.16 Automation of Lahore High Court
The Lahore High Courts in collaboration with the Punjab Information Technology Board has incorporated the Information and Communication Technology with the judicial process to speed up the justice system for litigants. The features that have been automated are: Electronic Case Filing, Lawyer’s e-filing portal, case file digitization and document management, court performance analytics and dashboards, online hearing and case proceedings and a helpline with a mobile application and SMS alert. This initiative has decreased the amount of time litigants have to wait at courts as well as the time between their case-filing and hearing. This streamlining saves times of lawyers, judges as well as citizens and a calendar are shared online which provides a comprehensive plan for the proceedings of the court (PITB, 2020).

5.17 Hotel Eye
Since Pakistan has seen a dreadful wave of terrorism in the past couple of decades, it was essential for the law enforcing agencies to develop a mechanism to keep checks on all visitors that stayed at the province. A comprehensive mechanism could not be implemented in manual terms as all relevant stakeholders like NADRA, CRO or PSRMS could not be notified or intimated in real-time, so PITB took the initiative labelled “Hotel Eye”, for the purpose of accurate data reporting of criminals that check into hotels/ motels in Punjab Province (PITB, 2020).

5.18 IG Khuli Kacheri
The Punjab Province facilitates its citizens by allowing them to lodge complaints against police in a designated cell in Inspector General’s office. The complaints were received through post or by hand in Lahore, with no follow-up mechanism or resolution status. The IG Khuli Kacheri initiative by the Punjab Information Technology Board allows citizens for an efficient method to submit their complaints. Citizens may submit their complaints inform of SMS, email or a voice call. Each complaint is designated a complaint number which can be follow-up from anywhere in the province (PITB, 2020).

6. Conclusion

With the changing global trends, it is impossible for the developing countries to lag behind the developed world in terms of incorporating the information technology in their bureaucracy. The variety of examples discussed in this paper show that efficiency is the key indicator of e-governance, followed by effectiveness as well. Across education, law and order and health care sectors, the Punjab Information Technology Board has developed mechanisms to ensure smooth procedures with desired and timely results. The results indicate that these e-governance mechanisms have been reflected in the transparency and accountability of the performance of involved sectors. A dynamic shift has been observed from traditional methods to modern mechanisms in terms of approachability, reporting and service delivery.

The changing pattern of absenteeism and poor performance to the presence of employees and good performance after ICT was implemented in organizations is the evidence that e-governance ultimately is the roadmap to good governance. Previously, an immense amount of manual work was required to track records and keep checks and balances of employee presence, which was costly and time-consuming as well. This has been resolved by the initiatives launched by Punjab Information Technology Board, through centralized databases and real-time reporting for monitoring and evaluation.

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