COVID-19 AND E-GOVERNMENT IN PAKISTAN: ANALYSIS OF MOBILE PHONE APPS

Muhammad Ajmal Sandhu
Senior Lecturer at School of Integrated Social Sciences (SISS)
Research Associate at Center for Security
Strategy and Policy Research (CSSPR)
University of Lahore
Lahore – Pakistan
muhammad.ajmal1@siss.uol.edu.pk

Abstract

Application of information and communication technologies in the daily business of life alike by governments, civil society, the corporate sector and by the private individual is referred to as e-governance. E-governance is convenient and enhances efficiency and transparency but requires an enabling environment that demands heavy investments in terms of resources by governments, organizations and private individuals to benefit from. That is why transition to e-governance is not that fast as to harness its full potential. Particularly low and middle income countries are not ready for universal transition to e-governance regarding public service delivery. However, covid-19 pandemic has reinforced its demand and rejuvenated the enthusiasm for transition to e-governance as it best copes with the pandemic. Instead of physical visits to public offices or to the market, citizens can avail services online staying at home through technology mediated electronic devices and the internet that best complies the standard operating procedures of the covid-19. Pakistan government is also well on track for e-governance and offers certain public services through mobile phone apps and web apps along with other means but still needs a long way to go for a full scale transition. This paper studies Pakistan's readiness for transition to e-governance and public perception on convenience, efficiency and transparency e-governance brings, by investigating the usage experience of mobile phone apps Pakistan government has launched before and during the pandemic. This study is based on mixed methods approach of primary and secondary data collection (both quantitative and qualitative) including the review of relevant sources available online.

Keyword: e-governance, covid-19, readiness for transition to e-government, digital divide, convenience, efficiency, transparency

1. Introduction

E-governance is the short form of electronic governance. Present authors will use Dawes's definition of e-Governance as quoted by Bannister and Connolly: it reads as, "e-governance comprises the use of information and communication technologies (ICTs) to support public services, government administration, democratic processes, and

relationships among citizens, civil society, the private sector, and the state" (Bannister, F., & Connolly, R. 2012).

Here it seems pertinent to illustrate on the difference between government and governance as well as on the difference between e-government and e-governance as conceived by the present authors for the sake of clarity and better treatment of concepts under hand. Government refers to the legal, judicial and administrative structures established by the state and run by the public officials who are either public representatives or public servants with the mandate to legitimately play their respective roles — with financial support from the public exchequer. Government includes all the state apparatus, infrastructure, logistics, human, physical and material resources mandated by the state for the public service. What is not included in government is the corporate sector and the civil society. They both (corporate sector and civil society) are private initiatives organized for profit (in case of corporate sector) and not for profit (in case of civil society) societal services. Although, government regulates and facilitates these for profit and not for profit sectors but they are not part of the government. However, their roles in society and the daily business of life cannot be undermined. When seen collectively how the power is being exercised and resources utilized by all these three actors (government, corporate sector and civil society) in their respective spheres of power and influence in a polity for meeting its needs, it becomes the subject matter of 'governance'. Therefore, e-governance implies the use of ICT by any or all of these three actors as rightly pointed out by Dawes whereas, e-government will imply the use of ICT only by the government (any of its pillars, ministries, divisions or departments) for discharging their duties in public service. There are four pathways of e-government: 1) Government to Citizen Pathway; 2) Government to Business Pathway; 3) Government to Government Pathway; and 4) Government to Employee Pathway.

Scope of this paper remains only within the first pathway that is government to citizen pathway (frequently written as G2C) e-government. Mina Aryal, editor of the ICT frame describes G2C e-government pathway as, "...most of the government services fall under G2C. …the primary goal of G2C is to provide facilities to the citizen. It helps the ordinary people to reduce the time and cost to conduct a transaction. A citizen can have access to the e-services anytime from anywhere" (Aryal, M. 2018). This is however noteworthy that the scope of G2C has expanded beyond transactions and encompassed a range of services including public complaints, accessing information, applying for different identity documents etc.

2. Strengths and Threats of e-Governance

E-governance has certain strengths to its credit. That is why it is strongly advocated and transition to e-governance is accelerating and admired worldwide. The most prominent of its merits are efficiency and transparency. Efficiency further counts on the responsiveness of government that helps fast track progress on national objective of good governance. Transparency increases citizens' access to information empowering them for accountability

that reinforces good governance in its own right. It is also convenient for people to avail services online instead of physical visits to public offices and to the market.

Although e-governance considerably mitigates corruption, it incurs the cost of provision of e-infrastructure and procedural reforms on part of government as well as demands digital literacy and availability of, and access to, necessary equipment on part of citizens to avail online public/private services and to engage with the state and the market through e-governance channels. Neither all governments nor all citizens are equipped with these enabling requisites for transition to, and cashing the benefits of e-governance. Well to do citizens and governments are better able to afford and execute the transition whereas marginalized population dividends, and governments with deficit revenue cannot afford to setup for all at once transition to e-governance. Therefore, in class based societies e-governance is happening piecemeal and generates, unfortunately, the menace of digital divide. Digital divide refers to the variability of 'the ability, both technical and financial, as well as access, or lack of access to the internet, to make full use of the technology available'(Digital Divide, 2021).

Digital divide is a global phenomenon but it is more prevalent in low and middle income countries where it cuts across most of the other divides but coincides predominantly along geographic (rural/urban) and gender divides. Other bases of digital divide observed so far include literacy, digital skills and financial status.

Avoiding the menace of digital divide requires an equitable and across the board enabling environment for e-governance within the administrative territory under the jurisdiction of a state to ensure the transition that helps progress towards good governance, and does not compromise the principles of inclusive and democratic governance. This should be the only way of keeping the uniformity of citizen behavior intact in the exercise of their civil rights and interaction with the state that should further strengthen national character and identity.

3. Covid-19 and e-Governance

Outbreak of The Covid-19 pandemic created circumstances that emphatically highlighted the significance of e-governance in emergency situations that render human mobility and physical interpersonal contact on halt. Covid-19 SOPs advocated for social distancing, staying at home and reducing in-person human contact as precautions against the virus and suspended the traditional citizen and state interaction during the lockdown whereas, public and private services that were operational through e-governance could run smoothly compared with the services demanding physical visit to public offices or to the market. Keeping this in view, it can safely be said that e-governance counts on the preparedness for combating such pandemics in future and requires from all governments to equip themselves to transfer maximum possible public services online to mitigate the socioeconomic impact such mass scale diseases may have in future. UN Under Secretary-General for Economic and Social Affairs also realized the role of covid-19 in rejuvenating e-governments during the welcome remarks of the launch of the 2020 United Nations E-

Government Survey by saying, "The pandemic has renewed and anchored the role of digital government – both in its conventional delivery of digital services as well as new innovative efforts in managing the crisis" (UNDESA, 2020). Therefore, post covid-19 circumstances have generated pressure on national governments to improve on and expand their digital infrastructure.

4. Challenges in Transition to e-Governance

Transition to e-governance is the transfer of public and private services to online mode facilitated with electronic devices. The pace and spectrum of adoption and usage of ICT collectively by the government, market or by the civil society shape the relative state of e-governance in a country. As it is already said in the preceding text, e-governance is gaining currency because of its merits qualifying for democratic as well as for good governance; it is very much desirable that transition to e-governance is inclusive and fairly equitable. It requires from the governments pursuing e-governance to be cognizant of the digital divide and its consequences for the people and the country in each case. Digital divide simply means a cleavage in the people of a country or at any other level on the basis of digital literacy and access to digital devices and online public/private services. If digital infrastructure is built discriminately in geographical terms, which means urban localities are provided with certain digital facilities and the rural communities are not, then of course it will cause or exacerbate the already existing digital divide. Likewise, if the education facilities aiming at digital literacy are provided to a certain class or preferentially on gender, ethnic and geographic bases, it will further divide the population along digital opportunities and capabilities. Such division is detrimental to the essence of democratic good governance and instead of generating uniformity in public behaviour, it will divide the public in and out of the digital administration.

All states and societies are not equipped and ready for transition to e-governance at the same pace because of the disparate resources available at their disposal for creating the enabling e-governance environment. It demands heavy investment in terms of human, technical and financial resources making it a challenge for most of the low and middle income countries who do not have enough resources for universal provision of digital infrastructure and fairly equitable digital opportunities and facilities for whole of their populations. Therefore the transition to e-governance in different states and societies is happening with different pace as their resources allow.

5. Focus and Methodology of This Paper

Focus of this paper is to assess Pakistan's readiness for e-governance and an empirical investigation of convenience, efficiency and transparency e-governance is credited for. Empirical evidence is generated through a citizen survey on the usage of nine mobile phone app(s) that the government of Pakistan has launched in the course of its e-government pursuit. Gadgets of all the nine app(s) are shown in the image. These app(s) include the ones launched before the outbreak of the covid-19 as well as the ones launched during covid-19 to manage and cope with the pandemic.

Image 1: Gadgets of all the 9 mobile phone apps studies in the citizen survey

Queries regarding readiness, convenience, efficiency and transparency are posed, responses collected and analyzed as per respondents' assessment on the basis of their experience with the mobile phone app(s) usage. The survey form was administered online and filled by 154 voluntary respondents.

6. Respondents' Profile

Here the gender, age group, qualification and occupation distributions of the survey respondents are provided. Out of a total of 154 respondents 93 (almost 60%) were males and the remaining 61 (almost 40%) were females. 'Other' gender option was included in the gender response options of 'male' and 'female' but none of the respondents belonged to 'other' gender category who filled the forms. Classification of respondents into four age groups, seven education groups and eleven occupational groups is given in the tables below.

Table 1: Distribution of Respondents by Age Group

S #	Age group	No. Of Respondents	Percentage of Respondents
1	18 - 30 years old	107	71%
2	30 - 40 years old	026	17%
3	40 - 50 years old	014	9%
4	50 years old and above	004	3%
	Total	151	100%
Note: 3 out of a total of 154 respondents did not respond on this question, that is why the total responses here are 151			
Source: citizen survey conducted by present authors on Pakistan's e-Government			

Table 2: Distribution of Respondents by Education			
S #	**Education**	**No. Of Respondents**	**Percentage of Respondents**
1	Primary (5 years of schooling)	1	0.6%
2	Middle (8 years of schooling)	2	1.3%
3	Matric (10 years of schooling)	0	0%
4	Intermediate	4	2.6%
5	Undergraduate	49	31.8%
6	Graduate	51	33.1%
7	Postgraduate	47	30.5%
	Total	**154**	**100%**
Source: citizen survey conducted by present authors on Pakistan's e-Government			

Table 3: Distribution of Respondents by Occupation/Profession			
S #	**Profession/Occupation**	**No. Of Respondents**	**Percentage of Respondents**
1	Student	75	48.7%
2	Teaching Faculty	22	14.3%
3	Researcher	14	9.1%
4	Administration and Management	16	10.4%
5	Support Staff	3	1.9%
6	Construction Worker	2	1.3%
7	Public Officer	7	4.5%
8	Business owner	3	1.9%
9	Healthcare Professional	3	1.9%
10	Journalist	2	1.3%
11	Self-employed	7	4.5%
	Total	**154**	**100%**
Source: citizen survey conducted by present researchers on Pakistan's e-Government			

This is to keep in mind that dominant majority of the respondents of this study are male (60%), fall in the age group of 18 to 30 years of age (71%), are either university students, graduates or post graduates (more than 95%) and belong to the academic community being students, teachers or researchers (almost 72%). Other categories of gender, age group, education and occupation of the respondents are in minority.

7. Pakistan's Readiness for e-Governance

Readiness for transition to e-governance depends on multiple factors that collectively form the digital landscape of a country. Those factors include mainly:

7.1 The cellular network coverage
7.2 The internet coverage
7.3 Mobile phone ownership

7.4 Digital Literacy/Skills
7.5 Access and Affordability

Regarding Pakistan, quantitative primary data on all these factors is collected through the citizen survey administered online as well as through the literature searched and reviewed and is presented here in the following text.

7.1 Cellular Network Coverage

Cellular network coverage refers to the coverage of a geographic area under a cellular network's functionality. The most common indicator for cellular coverage is the signal strength; whether the cellular network's signals appear on a mobile phone in an area or not. This is a very basic indicator for digitization of services be it regarding communication or transactions. Neither government nor market can expand its beneficiary net through online services in an area where there is no cellular network functional. There are four cellular networks operating in Pakistan and collectively have a subscription of almost 184.25 million. These cellular networks with their respective subscription strength by June 2021 are as shown in the table below.

Table 4: Cellular Networks Operating in Pakistan with their Respective Subscription Strength

	Jazz/Mobilink (including Warid)	U-fone	Telenor	Zong	SCO	Total
No. of Subscribers	69792924	23118277	40498899	49279306	1560493	184249899

Source: Pakistan Telecommunication Authority

According to the United Nations latest data on worldometer elaboration, the population of Pakistan as of Monday, July 19, 2021 was 225,357,302 individuals. (Worldometer, 2021) By virtue of these numbers the percentage of cellular subscribers becomes 81.75% but as a lot of people have subscriptions with more than one cellular networks, this 184.25 million figure and the percentage of 81.75% are not absolute. The absolute number must be much lesser. Moreover, the primary data collected reveals that subscription with a cellular network does not ensure the functionality of a cell phone throughout the country. Each of the 154 respondents of the citizen survey were asked how many places they happened to live in over the past one year and how many of those places had the cellular network coverage. The number of places a respondent happened to live over a period of past one year (June 2020 to June 2021) ranged from one to ten places and the total number of places that 154 respondents experienced to live in is 358 places making an average of 2.3 places per respondent. Out of those 358 places 279 places, that makes almost 78% of the total places had the cellular network coverage enabling the respondents for mobile phone communication while the remaining 79 (22%) places did not have the cellular network coverage rendering the respondents unable to use their mobile phones. This somehow gives an idea that till the date many residential places even in urban areas of Pakistan are not covered under cellular networks. This situation calls for the desired expansion of e-infrastructure on part of government for regulatory frameworks and investment friendly

environment as well as necessary investments and installations by business initiatives on part of ICT industry in the private sector. However, the cellular network coverage of an area is not the only prerequisite for e-services; the very next prerequisite is the area coverage under some internet service provider.

7.2 Internet Coverage

Pakistan Telecommunication Authority's web page provides the 3G/4G subscribers to be 100 million with a 45.61% penetration; 2 million basic telephony subscribers with 1.14% tele density and a 103 million broadband subscribers with 46.90% penetration (PTA, 2021). Although most of the cellular networks are providing internet (through mobile data packages) where they are functional, however, a mobile phone can be connected to internet through other internet providers including landline telephone broadband and other WiFi networks. The main thing for e-transition is to see whether the people of an area do have and can use internet along with text and voice communication on a mobile phone or not.

However, this should also be kept in mind that availing internet for e-services or for surfing happens not only through mobile phone, it can also be done on other electronic devices like laptop, desktop computer, tablet etc. Therefore in the citizen survey conducted for this study relevant inquiry made from the respondents in this regard was whether they had the internet available at their place or not. In the primary data it is surprising to have found that the number of places with internet coverage are higher than the number of places with cellular network coverage. 295 (82.4%) places, out of a total of 358 places our respondents happened to live in over a time period of last one year, had the internet facility available.

It is however, important to note here, regarding these figures of places with cellular network and internet coverage, that no rural urban breakdown of these places is available as this further probing was not done in the survey. It is however assumed, that most of these places should be urban places because a considerable majority of the respondents of this survey are graduates/post graduates who are assumed to be residing or visiting urban areas for study or work. Another reason for this assumption is that the social networks where the survey form was shared were of the people well settled in big cities. Therefore this sample can not be taken representing national cellular network and internet coverage across all the rural and urban areas of Pakistan.

7.3 Mobile Phone Ownership

A mobile phone is the most handy electronic device that facilitates an individual for telecommunication as well as for availing online e-services. Therefore whether a person has or has not a mobile phone will dominantly determine his/her capability of engaging with the state or the market online. Although, one can use someone else's mobile phone for an e-service but reliance on an other person's device negatively counts on the liberty and freedom one can enjoy with personal ownership of a mobile phone. That is why, ownership of a mobile phone is used as one of the primary indicators for convenience here in this study as well as many other national and international studies for digital landscapes. This

study pertains to the mobile phone apps, that is why ownership of a mobile phone was pertinent to be investigated.

Individual Mobile Phone Ownership
(Percentage)

	Rural	Urban	Male	Female	Total
Pakistan	39.2	55.1	64.8	26.3	45.3
KPK	42.8	53.5	63.2	27.8	44.7
PUNJAB	40.5	55.3	65.8	27.8	46.2
SINDH	32.3	56.6	65.4	24.5	45.6
BALOCHISTAN	34.7	43.6	58.2	13.7	37.3

Image 2: copied from Tabadlab (2021:P 7)

As only 80 respondents out of a total of 154 respondents are found to have used one or more of the mobile phone app(s), 76 (95%) of the 80 mobile app(s) users used the app(s) with their own smart phones and only 4 (5%) used it from someone else's phone. However, among the 74 respondents who had not used the app till the present inquiry, said, were they to use an app, they will use it from their own smart phone. It indicates predominant majority of the respondents owning a smart phone but we must keep in mind that the respondents of this study are voluntary respondents who predominantly belonged to the academic friends' circles and most probably belong to the digitally literate and skilled, middle or upper middle class and are educated more than the majority population. Therefore, with regard to ownership of a smart phone, this sample of 154 respondents is not the balanced representative of multiple divides evident in the population of Pakistan. However, Tabadlab's center for digital transformation has recently published a report titled "Connecting Pakistan: Covid -19 As a Catalyst for Digital Transformation" wherein they have presented data on individual mobile phone ownership in Pakistan with provincial, gender and rural/urban breakdowns as shown in the image (Tabadlab Report, 2021).

This is however discouraging that in Pakistan the gender gap in individual mobile phone ownership is very high. It is 38%, highest in the South Asian region whereas the gender gap in internet usage is even higher being 49%. this report also brings the fact to light that families are less willing to invest in buying digital devices for females than for males. Female digital privacy is also very limited that is further constricted by the implications of lockdown. Educational institutions and work places that offered some freedom for digital space for considerable proportion of women in Pakistan are closed and cyber crimes like online harassment and misuse of information pose threats to further constrict the digital space available for them. Rural urban divide is also very stark with regard to provision of internet services according to the Tabadlab report. It says that population of rural

households makes a 60% of the total population of Pakistan and only 24% of the rural households have access to internet. Limited affordability and poor network quality in rural areas add to their marginalization in digital space.

7.4 Literacy/Digital Literacy/Digital Skills

Basic literacy rests in the foundation of digital literacy. In Pakistan's context, it becomes a little tricky. A considerable proportion of the population who have basic literacy are not capable of using mobile phones mainly because basic literacy constituted the skills of reading and writing in Urdu or in some other local language, more so for the senior generations of Pakistan, particularly in rural areas but generally overall. Whereas the predominantly used language in e-devices is English. Therefore, majority of those having basic literacy are not able to use mobile phones and hence not able to avail the e-services independently because of the language barrier. Then there are others who have basic literacy in English but they are reluctant to use mobile phones and e-services independently because of a machine non-friendly attitude. Using a mobile phone and availing an e-service online also requires some basic skills about the operatability of the device and interacting with technology based apps or gadgets. All people, mainly the senior citizens are not apt on it. These skills packed together constitute digital literacy for this study.

Tabadlab's report writes only 40% of Pakistanis know what is internet. Citizen survey for this study included a query asking how many app(s) the respondent were aware of the nine app(s) shown on the form. Respondents' awareness on the app(s) is not found to be very high. 39 respondents (25.3%) were not aware of any of the app(s) launched by the government of Pakistan. Only 49 (31.8%) respondents were aware of 3 or more of the 9 apps whereas 66 (42.9%) respondents were aware of 1 or 2 of the 9 apps. This indicates a deficit of awareness on public mobile phone app(s) among the citizen. It counts on the lesser publicity than required for a fairer transition and calls for a robust media campaign by the government for a wider scale publicity, public awareness and usage promotion of the app(s).

Table 5: Respondents' Awareness on the Mobile Phone Apps

S #	No. of Apps Respondents Were Aware of	No. of Respondents	Percentage of Respondents
1	One of the Nine Apps	38	24.7%
2	Two of the Nine Apps	28	18.2
3	Three or More of the Nine Apps	49	31.8%
4	None of the Apps	39	25.3%
	Total	**154**	**100%**

Source: citizen survey conducted by present researchers on Pakistan's e-Government

For the sake of digital literacy at family level, all respondents were asked of their family size and the number of family members who are capable of using the mobile app(s) independently. Family size of all the respondents were categorised into 3 family sizes. Their frequency distribution is as shown in the table below.

Table 6: Distribution of Respondents by Family Size			
S #	**Family Size**	**No. of Respondents**	**Percentage of Respondents**
1	1-3 individuals	9	5.8%
2	4-7 individuals	109	70.8%
3	8 and above	36	23.4%
	Total	**154**	**100%**
Source: citizen survey conducted by present researchers on Pakistan's e-Government			

Only 17 (11%) of the respondents belonged to such families where every family member was literate and digitally skilled enough to use the mobile phone app(s) independently. Remaining 137 (89%) respondents belonged to families where the number of family members who can use the app(s) independently is less than the total number of family members. 13 out of these 17 respondents who belong to a family with all family members being capable of using the apps independently fall under the family size of 4 to 7 individuals, 3 fall under the family size of 8 and more individuals and only 1 respondent belonged to a family size of 1 to 3 individuals.

Another 17 respondents belonged to such families where nobody or only one individual can use the app(s) independently. 88 (almost 57%) respondents belonged to such families where 2 to 4 individuals can use the mobile phone app(s) independently. Only 32 respondents falling under the family size 4 and above had more than 4 individuals with required digital literacy and skills to independently use the app(s). However, a considerable majority of respondents told that the family members not capable of using the app(s) independently had a helping hand at disposal to help operate the mobile phone or to guide them to operate or to use the app(s) for them if they needed. But there are another 29 (18.8%) respondents who told of no one being available for the non-capable family members to operate for them or to help or guide them use the app(s) in case of need.

7.5 Access and Affordability

Access to digital devices in Pakistan is not the same across the board. Availability of market and cultural norms that accept accessing digital devices are discriminatory along gender, age and an individual's power position within the family (keeping the domestic politics, familial power structure in mind) in many areas, in addition to the financial capacity of the individual. Affordability refers to the service tariff and tax. Being a low income country, it is understandable that it is not affordable for all Pakistanis to buy and use an air time package despite owning a mobile phone and being covered by a cellular and an internet network provider. Therefore it is very imperative to increase the inclusiveness of access and affordability across the board for avoiding digital divide and a fairer transition to e-governance. Government should minimize tax on ICT sector in general and

for the consumers of e-services in particular along with investment friendly regulation for ICT businesses.

8. Pakistan's e-Government at Present and her Future Resolution for e-Governance

Pakistan being a lower-middle income country does not have the resources, at present, to a full scale transition to e-governance but it strongly resolves for a wider scale transition. Even at present, particularly with regard to managing and coping with Covid-19, Pakistan's progress on e-government has not been disappointing. Likewise her robust resolve for a fast paced and wider scale transition to e-governance is well explicit in the 'vision for digital Pakistan' embodied in Digital Pakistan Policy 2020. Objective IX of the said policy is on the promotion of e-governance. It reads as,

"Promote e-governance to make Pakistan the front-runner in good governance through IT enablement at all levels. Ensure efficiency, transparency and accountability by setting up integrated government databases and applications" (Pakistan Digital Policy, 2020). Written word of the policy objective is praiseworthy and deserves appreciation as it declares the resolve for transition at all levels that signifies inclusive transition. This policy objective also reiterates on efficiency and transparency as end goals of e-governance along with accountability that reinforces the mainstream sanction behind advocacy for e-governance.
United Nations' E-Governance Development Index provides a picture of how fast or how much e-government has taken place in a country. Pakistan ranks 153 out of a total of 193 countries included in the index for the year 2020. Pakistan's comparative progress regarding transition to e-government can be grasped by having a look on the history of index giving the relative rank of the country for each year measured since 2003.

Table 7: Pakistan's E-Government Ranks on UN's E-Government Development Index (2003-2020)

E-Government Development Index	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Pakistan (Rank)	153	148	159	158	156	146	131	136	122	137

Source: https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/128-Pakistan accessed on July 3, 2021

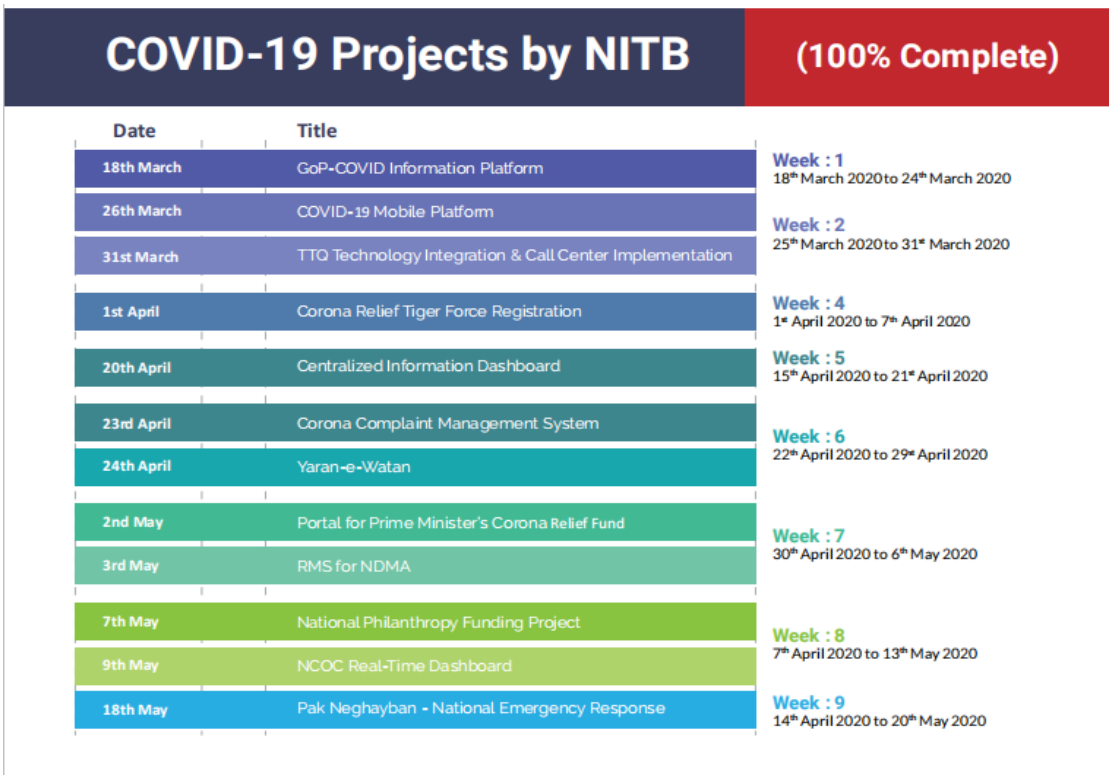
It is also relevant to quote here objective XII of the Digital Pakistan Policy that aims for improving ICT rank of Pakistan in the following words,

"Improve Pakistan's ICT ranking based on international indices and benchmarks measuring the business & innovation environment, infrastructure, affordability, skills readiness, and socioeconomic impact. Improve the provision of data to the international rating agencies."

Pakistan first set forth for e-governance in 2002 with the establishment of Electronic Government Directorate (EGD) under the auspices of ministry of science and technology. EGD then worked on increasing the internet speed and mobile phone user net in the country (Rafiq, 2018). In the same line of pursuit Pakistan Telecommunication Authority (PTA), later started the Smart Pakistan initiative and revolutionized the e-infrastructure in Pakistan by introducing the third and fourth generation internet services (3G/4G) in the country. PTA is now working on the provision of 5G internet in Pakistan (Atta Ullah et al: 2020).

EGD and the Ministry of Information Technology together have crossed the successive milestones of developing government of Pakistan's web portal, all provincial governments web portal along with the websites of almost each and every department, automation of the Prime Minister's secretariat, e-enablement of the senate and the national assembly of Pakistan. E-services launched so far include Computerized National Identity Card (CNIC) verification, subscriber identification module (SIM) verification, salary disbursement through (automated teller machines) ATMs, passport and visa services, document submission at securities and exchange commission of Pakistan, tracking the status of Hajj application, etc. along with many others (Butt et al, 2019).

National Information Technology Board has provided the details of e-government projects Pakistan has launched during the course of pandemic as shown in the image below.



Source: Image 1 Copied from NITB's Newsletter on Covid-19 (July 2020)

These projects include 2 of the 9 mobile phone apps covered in the citizen survey for this study: 1) Corona Relief Tiger Force Registration; and 2) Pak - Neghayban (National Emergency Response) that were used by 19 and 7 respondents respectively. Number of users among the total 80 users of mobile phone app(s) out of a total of 154 respondents, number of users against each app is shown in the table below.

Table 8: Frequency Distribution of Respondents with Experience of Mobile App(s) Usage

S #	Mobile App Name	No. Of Respondents Who Used the App (out of 80)	Percentage Of Respondents Who Used the App (out of 80)	Percentage of the Total Respondents (out of 154)
1	Prime Minister of Pakistan's Citizen Portal	68	85%	44%
2	Kamyab Jawan	23	28.8%	15%
3	Pak Neghayban	7	8.8%	4.5%
4	Corona Relief Tigers Force Registration	19	23.8%	12.3%
5	Durust Dam	6	7.5%	4%
6	Baytee	4	5%	2.6%
7	Clean and Green Pakistan	14	17.5%	9%
8	Special Education	4	5%	2.6%
9	City Islamabad	4	5%	2.6%

Source: citizen survey conducted by present researchers on Pakistan's e-Governance

Data and analysis on the convenience, efficiency and transparency are being presented below and discussed one by one as assessed by the survey respondents based on their experience of using the apps, along with the mainstream assumptions on these factors as reviewed in the literature.

9. Convenience

This has been noted that in the governance parlance e-governance is more often said to be convenient. Oxford Advanced Learner's Dictionary defines convenience as, "the quality of being useful, easy or suitable for somebody" and "something that is useful and can make things easier or quicker to do or more comfortable". In the light of this definition, questions were posed to the respondents inquiring usefulness and easement of using the mobile phone apps meant for the public service delivery.

Dominant majority of the mobile phone app(s) users (67.5%) said they found the app(s) useful, 25% of the users said they did not find the app(s) useful while the remaining 7.5% users were uncertain of the usefulness of these app(s). Absolute number of user respondents against all three categories is given in the table below.

Table 9: Usefulness of the App(s) As Experienced by the Respondents			
S #	**Respondents' Experience on Usefulness of the App(s) Used**	**No. of Respondents**	**Percentage of Respondents**
1	App(s) found useful	54	67.5%
2	App(s) found not useful	20	25%
3	Uncertain about the usefulness of App(s)	6	7.5 %
	Total	**80**	**100%**
Source: citizen survey conducted by present researchers on Pakistan's e-Governance			

77 of the 80 mobile phone app(s) users found the app(s) they used easy to use and only 3 of the remaining users found using the app(s) difficult. It shows the user-friendliness of apps. Moreover the experience of app(s) usage is considered pleasant on the basis that all the 80 (100%) users preferred using the app(s) again in case of need instead of visiting the relevant public office physically. Although the possibility of improving the apps is there as 59 (73.75%) app(s) users said the apps can be further improved. Only 13 (16.25%) users said there is no need of improving the apps for easy use. Remaining 8 (10%) users were not sure of further improvement of apps for easy use as they said the apps might be improved.

In response to the query whether the respondent will recommend using the mobile app(s) to others or not, 80 (52%) of the total respondents said 'yes', 20 (13%) said may be, only 14 (9%) said 'No', whereas the remaining 40 (26%) respondents showed no concern with query by clicking on the 'not applicable' response option.

Another relevant query regarding the convenience factor was whether the mobile phone app(s) are beneficial for citizens and count on the good initiatives of the government or not. In response to this query 113 (73.4%) out of a total of 154 respondents said these mobile phone apps are beneficial for citizens and a good initiative on part of government. Only 10 (6.5%) respondents did not appreciate this initiative and said they are not beneficial as such. The remaining 31 (20%) respondents did not give a clear cut opinion on the mobile apps' being beneficial or a good initiative of government by clicking on the 'may be' response option. In the same line of inquiry, respondents were asked of their estimated percentage of Pakistani citizens who are able to benefit from these apps. Responses to this query range within a wide bracket but not very healthy for majority respondents' estimates of the proportion of Pakistani citizens' who can benefit from such apps and online services. A dominant majority of 106 (68.8% respondents) gave a percentage figure up to or less than 50% of the citizens who they (the respondents) think can benefit from such apps and online services. 46 (almost 30%) said the percentage of beneficiaries to be between 50% to 80% while only 2 respondents said the beneficiaries to be up to 90%. no respondent gave a figure above 90% on Pakistani citizens capable of benefiting from such apps and online services.

This is a little alarming and emphatically highlights the need of increasing on the digital capabilities of people in the country. Survey respondents also expressed their opinion on the need of improving the digital literacy/skills, affordability and accessibility of citizens. The survey query in this regard was whether more and more people should be able to use such online services and mobile phone apps independently or not? In response to this query 125 (81.2%) respondents said 'yes' while only 6 (3.9%) said 'no'. The remaining 23 (almost 15%) said 'may be'.

Respondents were also asked whether the government should offer more services online through mobile phone apps or any other technology mediated means or not? 129 (83.8%) respondents said government should offer more public services online through such mobile phone apps or by any other technology mediated means. Only 6 (3.9%) respondents said no to more apps and services like these while the remaining 19 (12.3%) respondents were neither affirmative nor non-affirmative in their response to this query by clicking on the 'may be' response option.

10. Efficiency

Oxford advanced learners dictionary defines efficiency as, "the quality of doing something well with no waste of time or money" and "ways of wasting less time and money or of saving time or money". Likewise, Collins and Cambridge dictionaries write that efficiency is the quality and ways to deliver the tasks without wasting time, energy and resources. Here for the purpose of this study we have inquired from our respondents whether the time and money consumed in availing a public service is lesser through mobile phone app than the time and money incurred on availing the same service by visiting the relevant public office? 103 (almost 67%) respondents believed that availing a public service online through mobile phone app(s) or through any other technology mediated means works faster than physically visiting the public office while a comparatively even bigger majority of 126 (81.8%) respondents believed in such online services being less expensive than the services availed by physically visiting the public office. Only 24 (15.6%) respondents said of online services not being faster than visiting the public service physically and an even smaller minority of only 7 (4.5%) respondents said that online services are not less expensive compared with physically visiting the public office. 27 (17.5%) respondents were unsure of their response and fell in the 'may be' category for online services being faster. Likewise 21 (13.6%) respondents were found unsure of the online public services being less expensive and responded on 'may be' instead of a straight 'no'. These figures indicate that the predominant majority of respondents with experience of using mobile phone apps being affirmative of the public services through mobile phone app(s) being faster and less expensive when compared with the physical visits to the public office for the same service. Which means the mobile phone app(s) have increased the efficiency of public services by reducing the duration of time and the amount of money incurred on availing the service online.

An evidence from Nigeria coincides with these survey findings. A study on e-government in Nigeria found that there it was a fight against corruption and need of the hour. E-

government in Nigeria revolutionized the public behavior; people started owning digital devices and learned online apps to stay connected with the local government. According to him these technologies have changed the lifestyle of people with the flow of information, accessibility and means of delivery of the public service. Furthermore, this change in how the citizens interacted with the government made government's response more efficient, low cost and transparent (Danfulani, 2013).

Beside the lesser cost in terms of time and money, fulfillment of the purpose of using the app(s) is also considered very important in this line of inquiry and it is asked from the citizen survey respondents of this study whether the purpose of using the app(s) was fulfilled or not? In response, 50 (62.5%) respondents out of the 80 app(s) users said that the purpose of using the app(s) was fulfilled while 22 (27.5%) users said the purpose was not fulfilled. Remaining 8 (10%) users were uncertain of the fulfillment of their purpose behind using the app(s).

Review of literature reveals that these empirical studies seem to fulfill the mainstream assumptions about e-government/governance. For example, UNESCO wrote in its E-Government Readiness Report Back in 2005, "the incorporation of informational and communication technology into the government services to its citizens in terms of time and cost can make e-governance more efficient (UNESCO, 2005). Likewise IGI Global highlighted that e-Governance is the correct use of available resources using technological means. While efficiency of e-Governance depends on the fewer people doing an improved job than doing it manually in public offices (Freeman, 2009).

11. Transparency

Transparency in governance parlance refers to the access to the information about government decisions on resource allocation. Openness of the procedures and easy access to the information is considered necessary for fighting corruption, fostering democracy, good governance and accountability of public officials. Ball (2014) identified three metaphors for transparency: "1) transparency as a public value embraced by society to counter corruption; 2) transparency synonymous with open decision-making by governments and nonprofits; and 3) transparency as a complex tool of good governance in programs, policies, organizations, and nations". Mainstream assumptions in the existing literature on e-governance assert that e-governance enhances transparency. ICTs can foster transparency by enabling open decision-making, providing information to the citizens, and increasing interaction between citizens and the government. This negative correlation between e-governance and transparency is investigated in this study and an empirical evidence is generated through relevant queries in the citizen survey form.

Keeping Pakistan's governance culture in view, particularly in the public offices, questions included in the survey on transparency comprised of queries on exploitation of the citizens by public officials, demand of bribe, discriminatory and preferential treatment meted out to the citizens by the public officials. 114 (74%) of the total respondents said that availing the public service online through app(s) or by some other technology-mediated means saves

the citizen(s) from exploitation by the public officials. Only 10 (6.5%) respondents said that it does not while the remaining 30 (19.4%) respondents were not of a clear cut opinion on this query. They neither said 'yes' nor 'no'; they instead said availing public services online through mobile phone app(s) or through some other technology mediated means might save the citizens from exploitation at the hands of public officials. In response to the question whether online public services save the citizens from demand of bribe by public officials, 112 (72.7%) out of a total of 154 respondents, said yes whereas 16 (10.4%) respondents said no. The remaining 26 (16.8%) respondents said it might save the citizens from demand of bribe but they were not sure of it.

On discriminatory or preferential treatment, 116 (75.3%) respondents were of the view that online interaction with the public officials saves the citizens from discriminatory or preferential treatment by the public officials while 11 (almost 7%) respondents said it does not. The remaining 27 (17.5%) respondents' response on this query was neither affirmative nor non-affirmative as they said it might save the citizens from discriminatory or preferential treatment meted out to them by the public officials. These findings confirm the negative correlation between transparency and e-governance (here e-government to be more precise). Asorwoe (2014) conducted a study in Sub-Saharan African countries on this correlation and came up with the similar findings. Dr. Lupu (2015) researched the level of corruption in Eastern European countries before and after their European Union (EU)'s accession and compliance with the EU's e-governance laws. He predicted that the ability to access information through e-governance would lead to opportunities to control the government and will, as a result, decrease corruption. He concluded that a "1% increase in the index of e-government could result in a decrease in corruption by 6.7 % for countries entering the EU, and 6.3 for non-EU members".

12. Conclusion and Recommendations

E-governance is the call of the time and cannot be reversed. Evidence generated by empirical research confirms its mainstream theoretical assumptions of being more convenient, efficient and transparent. These are the features of governance all the international institutions be it United Nations, World Bank, International Monetary Fund or any other development organization along with national governments across the globe emphatically foster. It strengthens democratic norms and leads to good governance. It fulfills the purpose of interacting with the state and the market without physical visits to the public offices and to the market that further reduces the cost of availing public and private services in comparatively lesser time. It reduces the exploitation of citizens at the hands of public officials by reducing the demand for bribe, discriminatory or preferential treatment meted out to them when visiting public offices physically. It is useful, convenient and beneficial for the citizens and they prefer it over the tradition pattern of governance. That is why they demand more of the services online.

However, readiness for transition to e-governance is a challenge that needs be strategically met by whole the world collectively. Low and middle income countries must particularly be assisted by the developed world for inclusive e-governance. National governments are

challenged to mitigate the digital divide; this will have a trickle down effect on other sociocultural divides ultimately serving the purpose of inclusive and egalitarian norms. If inclusive e-governance is managed, the world can get rid of geographic, gender and class divides to a considerable extent.

e-governance offers the best mechanism of coping with the pandemics like covid-19. It provides the best alternate to physical visits to the public offices and to the market as well as to in person human contact by offering public and private services online. It made compliance with the standard operating procedures of the covid-19 feasible without compromising continuity of the routine activities available online. Pakistan, at present is not ready for a full scale transition to e-government but it resolves strongly for the same and is well on track for that.

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