Impact of 'Open Data' and its Effectiveness for Pakistan Social Issues: Learning from the UK Experience

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Abstract

Developmental projects are essential ingredients of prosperity and well-being. Every nation has to ensure that her people are living in a perfect and safe socio-political environment. However, it varies from region to region and place to place. UK as a country is a big economy which is capable of giving its people the type of security they need. For this purpose, various types of strategies have been emphasized which enable the government to look for the benefit of its people. Open data system is one of these important developments which have been initiated by the UK government to provide huge access to databases. It improves their learning and knowledge, and gives the opportunity to think 'out of box'. It also enables people to polish their learning skills and take things out of their resources and utilize them fully. Although, there is some compulsion on the use of private data sources, yet it is necessary to know that not all data are confidential. The research looks into the pros and cons of using open data systems and to assess its impacts on the social and political development in UK. The use of open data system is not only beneficial for the people to perform their daily life tasks, it is important to evade corruption and foster great accountability of national institutions. So, there remains feeble chance of witnessing corruption in the society that could cause chaos in the nation. The use of open data systems is important for boosting up innovation and creativity for a developing country like Pakistan. Open data system has been seen playing a big part in establishing a trend of innovative growth pushed by the availability of these resources. The influence and impact of 'Open Data' has largely been observed during the recent Coronavirus pandemic (Covid-19) where the government has utilized the data to tackle the disease in Pakistan.

Keywords: Open data, UK, access to databases, accountability, governance, social development

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Introduction
It is very important for any country of the world to undergo developmental projects in order to prosper. They must ensure that their people are living under a good social environment that could grant them safety. UK as a country and a big economy has presented a model to the world as to how it has efficiently provided its people the type of security they need. For this purpose, various types of strategies have been emphasized which enabled the government to look for the benefit of its people. Open data system is one such initiatives within the setup of UK that provide huge public access to databases.[1] This research study looks into the pros and cons of using open data systems to measure its impacts on the social development in Pakistan from UK Perspective.

The use of open data system is not only beneficial for the people to perform their daily life tasks; it is important to evade corruption and foster great accountability of national institutions. Open data systems ensure that the people are able to find the data about various topic of the research. Open data is the type of data which is openly accessible to everyone and any person can reach these sources. In this way various governments in the world have ensured achieving transparency. When a company shares its data publicly, there is a fair chance that everyone will see its performance.[2] This approach was successfully put into practice in the United States when Obama began a campaign for ensuring transparency and accountability in his regime. For this purpose, the open data strategy was extensively applied to ensure that pubic organizations could work efficiently. The same has been followed in the United Kingdom as well in order to strengthen the trend and culture of transparency there.[3] The key motivation for introducing open data system was to consolidate the role of civil society and the citizens by ensuring their participation in social development of the country. It has mainly been employed by the government to grant the people their right to know how their money is being spent. This is an effective tool for self-accountability of government and promoting good governance in a country. In order to fulfill their requirements, this open data strategy has
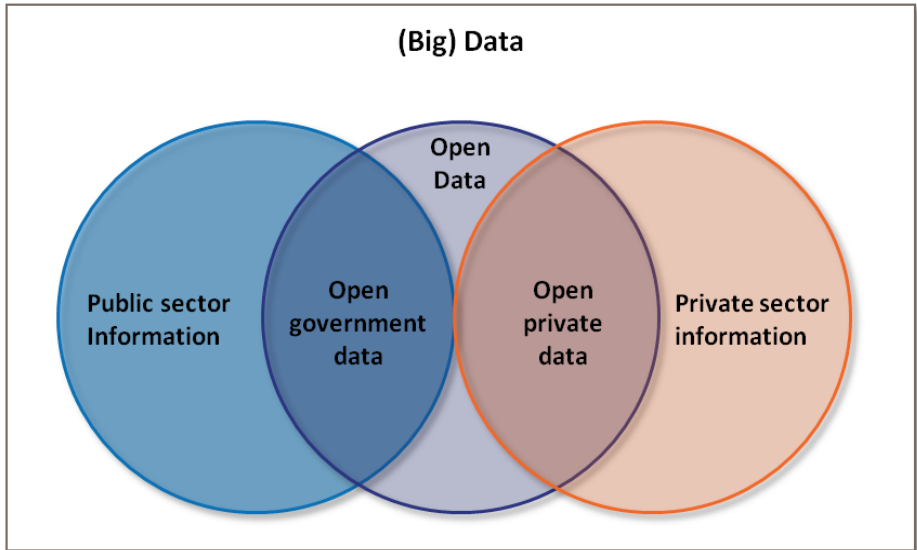
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[1]   D. J. Wilson, & C. Game, *Local Government in the United Kingdom* (Macmillan, 2011), 40-44.
[2]   Judie Attard, 'Strategies and Approaches for Exploiting the Value of Open Data' (unpublished doctorate dissertation), Bonn: Rheinischen Friedrich-Wilhelms University (2016), 121-135, http://hss.ulb.uni-bonn.de/2017/4721/4721.pdf
[3]   Pete Alcock, *Social Policy in Britain* (London: Macmillan International Higher Education, 2014), 105-111.

been employed by the governments in UK.[4] Such systems are, therefore, a good support for governments to perform effectively and efficiently also for a developing country like Pakistan.

Figure A: Open Data Relationship with Other Sources of Data

Source: Drawn by author

Background of the study

In order to understand the impact of open data system in the context of United Kingdom, it is necessary to look at the history of these systems. One might take a look at the initiation of such type of systems back in 2010 which enabled the country to introduce its open data system.[5] Although there have been many challenges associated with the use of these open systems, yet they are still being used due to their utmost significance in the management of governance systems. These systems not only prevail in UK, as well as in various other countries. Due to their huge importance, the countries prefer using such systems to stay clear of the sort of corruption that could spread in their country. It is preferred that such kind of systems are playing a big part in their country's

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[4]   David Judge, *Political Institutions in the United Kingdom* (London: Oxford University Press, 2005).

[5]   E. W. Welch, 'The Relationship between Transparent and Participative Government: A Study of Local Governments in the United States', *International Review of Administrative Sciences* (2012), 78:1, 93-115.

performance through enhancement in its social and political setup, GDP and economic growth with transparency. Opening up government information is likewise expected to result in the foundation of new organizations. For residents and open division associations, open information are surely going to emerge from free access to information as opposed to utilizing chargeable information assets and a chance to improve productivity of administration arrangement. This study is based on the findings related to huge significance and great influence on the economy of the United Kingdom. In order to achieve enormous progress in the country, one precondition is to ensure that it has a good accountability system.[6] Though implication of this 'Open Data' system reveal that Pakistan can achieve an optimal level of success through ensuring people's participation in both social and cultural development. The same is expected especially in fighting with the ills of corona virus and similar pandemics.[7]

Statement of the problem
The open data systems are successful in developed countries like UK, so this study aims at exploring the potential of the transformative role of open data system in developing economies like Pakistan. So, the main focus of the study is on measuring the social development which is resulted due to the availability of the open data systems. The study assesses the effectiveness of this system for the Pakistani society, mainly on social and cultural aspects and social development of country by taking inference from the United Kingdom experience.

Research questions
1. How the open data systems have been helpful for the social and political development in United Kingdom?
2. How can using these open data systems help Pakistan in achieving social and political development through forming suitable policies for the people?
3. How open data system can play role in achieving transparency and thus ensuring genuine democracy in Pakistan?

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[6]   Marcus Hobley, 'Public Opinion can Play a Positive Role in Policy Making', (2012), 44-52, https://www.theguardian.com/public-leaders-network/2012/sep/03/public-opinion-influence-policy.
[7]   Hogge, B., *Open Data Study, Transparency and Accountability Initiative* (2019), 99-105.

Research objectives
1. Exploring the scope and status of 'Open Data' system in Pakistan after right of information Act bill (2016), especially its impact during the recent COVID-19 pandemic.
2. Studying the case of the UK and assessing its implementation thoroughly for achieving social sector development in a third world country, like Pakistan.
3. To determine the role of 'Open Data' system in achieving and solving social issues of Pakistan, specifically those related to transparency, accountability and good governance with a special focus on the issues generated by the COVID-19.

Research hypotheses
H1: There is a positive relationship between the social and political development and use of open data system in the case of UK.
H2: The use of open data system helps in improving the social development of a country (Pakistan).
H3: The more open data is available for public, the more it can create transparency and accountability in various government departments.

Literature review
Making certain types of information available to the public has been facilitated in certain countries which are mentioned in the following. Essentially openly available information, which is generally utilized by firms, includes: geographic, climate, statistic, firm, traffic and administrative information, among others. In March 2011, the Finnish Government[8] announced its goals to build re-utilization of open information as one of the key proportions of the Government Program. Encouraged by these goals, government associations started opening up their information assets in 2012. The National Land Survey of Finland opened up its advanced topographic information in May 2012. After a year, the Finnish Meteorological Institute[9] opened up climate information by means of its online administration. The objective was to open all noteworthy information assets gathered and kept up by the open organization by 2020, making them accessible and usable in machine-

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[8]   Antti Halonen, 'Being Open about Data. Analysis of the UK Open Data Polices and Applicability of Open Data', *The Finnish Institute in London* (2014), 205-209, accessed at: http://www.fininst.uk/wp-content/uploads/2017/09/being-open-about-data.pdf.

[9]   N. White, *Free and Frank: Making the Official Information Act Work Better,* (Wellington: Institute of Policy Studies, 2007).

comprehensible arrangement, for nothing out of pocket and under clear terms of use. Moreover, the 'Open Data' portal of European Union which allows sharing of information to 27 member states also helps in establishing transparency in the region.

In Spain, in 2012, over 150 organizations worked solely in the 'info-mediary' area delivering esteem included administrations utilizing open information. The part was utilized by nearly 4,000 individuals at a time, and the yearly estimation of these administrations was evaluated to be EUR 330–500 million. The UK, Denmark and Finland have been among the top three countries focusing on the open data systems, as is shown in Figure B. The United States is at rank 8 among the top ten countries using open data. In the USA, the Weather Channel and Garmin[10], a main organization in the GPS[11] advertising, were established utilizing crude open information. Garmin's reasonable worth was more than USD 7 billion out of 2013 (Capgemini Consulting, 2013; The Open Data Economy). Another case of bridling crude open information for business use is given by Climate Corporation[12] established in 2006. It, at first, accumulated climate and harvest gauge information for climate protection purposes. The organization later extended its utilization of such information to help sowing plans. Climate Corporation[13] was sold out in the harvest time of 2013 for USD 930 million.[14]

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[10]   James Cooper, *Margaret Thatcher and Ronald Reagan: A Very Political Special Relationship.* London: Springer, (2012).
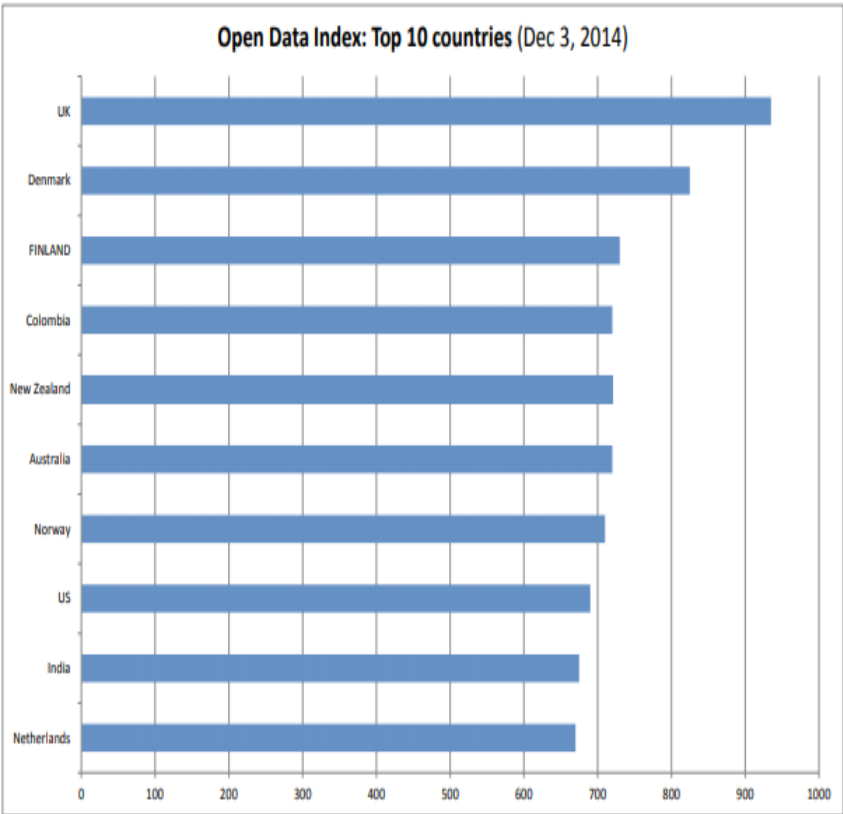
[11]   David Heald, *Transparency: The Key to Better Governance?* (No. 135) (Oxford University Press, 2006), 91-107

[12]   C. Reddick, 'Open Government Achievement and Satisfaction in US', *Journal of E-Governance* (2011), 34(4), 193-202.

[13]   Duncan Watts, *British Government and Politics* (London: Edinburgh University Press, 2012), 5-9.

[14]   https://www.businesswire.com/news/home/20131002005749/en/Monsanto-Acquire-Climate-Corporation-Combination-Provide-Farmers

Figure B: Top Ten Open Data System Using Countries

Data source: Open Data Index 2014, Open Knowledge Foundation. https://index.okfn.org/country/

Methodology

The research is conducted by using deductive approach, which is a top down-approach where the data will be examined to see the impact of 'Open Data' on social and political development of a country. The hypotheses will be tested for confirmation or rejection with the help of measurement of variables through correlation method.

For this particular case study, construct validity or more closely the convergent validity is considerable since all the variables should measure the same concept and hence should be strongly correlated. To test this correlation, factor analysis has been used. Similarly, validity of the instrument is measured here by ensuring that the questionnaire

contains questions relevant to the concept being undertaken. In quantitative techniques, validity of instrument is more on theoretic aspect as to its purpose. Here, the objectives are clear so construct validity and its testing techniques are used to substantiate the validity of the instrument.

Both qualitative and quantitative data collection methods are used. Interviews and survey research techniques are employed and data is collected from four types of 'open data' user groups: business, media, public and NGOs. The study implied deductive method which incorporates top-down approach. Statistical analysis involved correlation, regression analysis and factor analysis. The results were aimed at showing: whether the use of open data systems influenced the social sectors development of Pakistan or not.
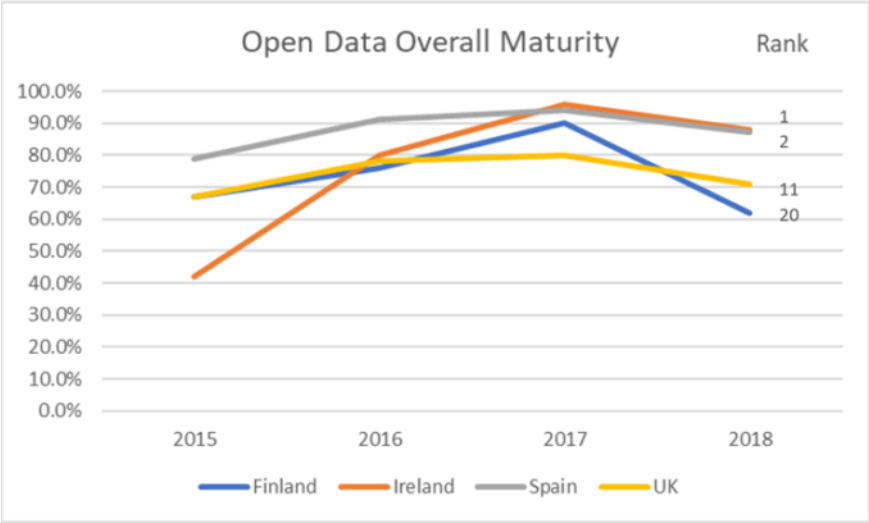
Open Data System
'Data' (contents) will be called as 'open' if everybody is permitted to use it for free. There are some essential features that are related to the use of open data systems such as: it is openly available to read and review by different people; it can be utilized for reading, searching and filtering of information; and it can easily relate with other web applications.

Open data systems can be used to help the countries in knowing how to make best use of their resources and how to go about making progress.[15] With the advancement in technology, most organizations now understand its benefits such as: 'European Union's Open Data Portal'; 'Opening up Government' banner are example of UK government's efforts, and, at the world level there is Global Open-data Index. All these examples are initiatives to get together and give access to huge quantities of data regarding industry, education, studies, healthcare [16] and employment.

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[15]   John Mohan, *A United Kingdom?: Economic, Social and Political Geographies* (London: Routledge, 2014), 102-104.
[16]   Public Administration Select Committee, Statistics and Open Data: Harvesting Unused Knowledge, Empowering Citizens and Improving Public Services (HC 564) (London: TSO, 2014), 55-57.

Figure C: Expansion in the Use of Avoindata.fi Service

Source: Open Data Maturity Index. www.opendatabarometer.org

The Open Data Barometer venture informs that in 2013, none of the 77 nations evaluated had directed a complete appraisal of the effects of opening up data. A noteworthy purpose behind this is the absence of efficient information accumulation and arrangement of insights concerning information use. For instance, in March 2003 Spain[17] established the VOC ('Virtual Office of Cadastre') in request to offer complete geographic information for nothing out of pocket. The way toward opening up information proceeded in June 2004, when the dispatch of the IDEE geo-portal further improved the accessibility of geographic information.[18] For instance, map utilization expanded by some 700% during 2004 -2005 (from over a million uses to more than 41 million). In 2010, the relative figure was in excess of 124 million, implying that request was a multiple times more prominent than in 2004. Ahonen-Rainio et. al. (2014) report that new clients have developed among private people and SMEs specifically. In Finland, use of the open government information through Avoindata.fi service has likewise quickly expanded, as the main database of all open data available at one point.

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[17]   Julian Knight, *British Politics in Dummies* (London: Wiley, 2014), 60-64.

[18]   Ben Worthy, 'Freedom of Information and the MPs' Expenses Scandal' in J. Hudson (ed.), *At the Public's Expense? The Political Consequences of the 2009 British MPs' Expenses Scandal* (London: Palgrave, 2014), 27-43.

Improved transparency with Open Data

A transparent system is expected to enhance trust in the government and make its character more democratic by enhancing people's inclusion. Though there has been a debate going on about the efficacy of a transparent system to produce only desirable effects for government, public open data, however, can improve the transparency, by showing how the taxpayers' excises and taxes are being used by the government. In Britain, in this regard certain organizations like Open Society, can be called for more transparency, so to grip the régime for accountability. It can show how the estate subsidiaries are paid throughout the Europe. Ahonen-Rainio *et. al.* (2014) survey the effect of open spatial information. Their report reveals insight into the methods of utilizing, significance and advantages of geographic information for clients, however, it does not look into the monetary effects in euro terms. Empirical examination by Koski (2011-12)[19] shows that, for firms in structural and building exercises and related specialized consultancy division in 15 nations, the opening up of geographic information and a move towards utilizing negligible expense valuing was associated with fundamentally quicker deals development. In light of overview reactions from 531 Finnish organizations, Koski's further investigation shows the age of new information based items and administrations in Finnish organizations. The outcomes recommend that organizations occupied with expert, logical or specialized exercises, land or development were bound to create information based item and administration advancements than organizations in different areas. Kiuru et al. (2012)[20] uncovered that especially little firms can benefit rapidly from recently opened open information in their items and administrations. He further shows that especially the small firms can benefit rapidly from recently opened open information in their items and administrations.

Impact of 'Open Data' on people's lives

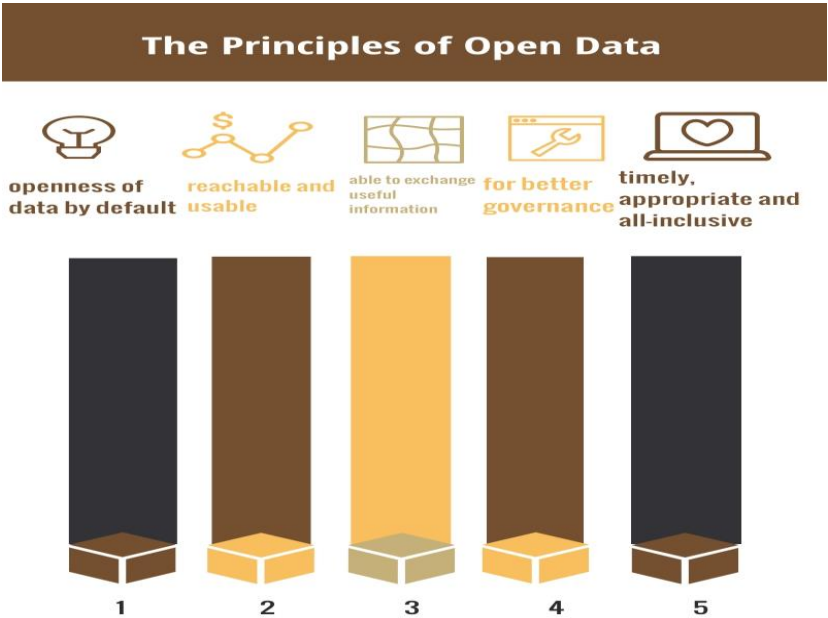As explained by Worthy (2018) open data systems impact the life of people in three ways:

1) Improving the government by making government more liable than before, by making the government more well-organized and competent and by extending public services.

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[19]   Heli Koski, 'Ensuring Open Data implementation success', *Info. Sys. Mana.* 22:5 (2011-12), 86-89.

[20]   Kiuru, et. al., 'At the Public's Expense? The Political Consequences of the 2009 British MPs' Expenses Scandal (London: Palgrave), http://odimpact.org/key-findings.html

2) Empowering the residents – this step is taken by controlling the lives of citizens.
3) Introducing new economic opportunities, to let the people and organizations both in cities and remote areas, get more transparent information to boost economic progress and open new industries and sectors.

Figure D: Expansion in the Use of Avoindata.fi Service

Source: Designed by the author

Global impact of Open Data Sets

The use of open data system is quite helpful for the nations so that they could assess what is going wrong with their policies. So, they can understand the ways to tackle the challenges that come their way. So, having an accessibility to open data sets is an effective way to ensure that this can be utilized for beneficial purposes. It can be seen by reviewing various studies of different countries conducted on the impact of open data (Hobley, 2012).[21] (a) In India there is a governmental portal in

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[21]   Marcus Hobley, 'Public opinion can play a positive role in policy making', 3 September 2012, <https://www.theguardian.com/public-leaders-network/2012/sep/03/public-opinion-influence-policy>

which open data is being utilized; (b) in USA, 'Data.gov' is an open data site, which has the capacity to contain various type of data inside of it; (c) in Australia 'data.gov.au' provides access form of data, (d), in New Zealand 'Data.govt.nz' provides lists about various datasets and in UK, 'Data.gov.uk' is a working site.

Case study of the UK regarding Open Data System

Knowing the historical background and getting a glimpse into the history of UK will help us analyze the case study of UK better, if we want to draw some conclusions and lessons for social development of Pakistan. This is also feasible because since its independence, Pakistan has been mostly following the UK pattern of governance.

a.   History of pre-1945 era

The history of United Kingdom is long and encompasses major events about the progress of the country. It is important to mention that humans started living in the areas where Britain exists now, in the period of Ice Age. In this time, the levels of sea used to rise higher and Britain used to be connected to the region of Europe. It passed through the Bronze Age as bronze tools are found there. The Romans conquered the present areas of Wales and London in 43 AD and henceforth started the written record of its history. However, as time progressed, other communities entered this region and the Anglo-Saxons established their control here in about 450 AD. Later the Normans paved their way towards the land of Great Britain. However, in the period of twelfth and thirteenth centuries, Williams began to establish their rule in United Kingdom. It was Edwards in the period of fourteenth and fifteenth centuries who conquered this land. The great significance of this period is the *Hundred Years' War* that began during this era. King Edward III got famous about fighting in France while sparing his sons back to the country to settle the affairs of the government.

        In the sixteenth century, King Henry VIII came, who became very famous because he established his rule quite powerfully within the country. He was collectively the ruler of both Wales and England at the same time. Not only this, he also dismissed the pope of the Church of England to establish himself as the head of the great church. It is also important to mention that he also was the king who established himself as the King of France as well. Later on, France got out of the control of England, and France was thereafter a separate country. It was the same period when Queen Elizabeth took over the throne of England after

Mary, often named 'Bloody Mary' due to the execution of many religious sects.[22]

The period of Queen Elizabeth was the golden age for England because of various developments happening in the intellectual domains. Sir Francis Bacon and some other dramatists came to the scene during this era. In the seventeenth century, a protestant king established his rule over England. Previously, it was the Romans at the time of Queen Mary who ensured that Catholic Romans gained power during her reign. However, King James I tried to establish connections with the Catholic Romans in an attempt to improve his control.

In the eighteenth century, George I became the King of England, but he was unable to read and write, therefore, had to create a position of a Prime Minister who could understand things on his behalf. So, this was the time when a shift came in the politics of England, as because of this position in the politics of UK the Prime Minister got full control over the government. Even today, the Prime Minister is responsible for handling the major affairs as well as undertaking big decisions. In 1777, the American War of Independence came up when the Seven Year's War ended. During the American War of Independence, thirteen of the American colonies got separated to form a new country.

During the nineteenth century, when Queen Victoria became the ruler of England, she could not manage the government's affairs all by herself. So, she had to take the assistance of her prime minister in order to perform the operations and functions of the state. The later periods of the history were characterized by significant wars like Opium Wars and Crimean War. It is important to mention that the period of Queen Victoria was probably a special period of her rule, since her rule encompassing forty percent of the global regions. Then in the twentieth century came two great wars—World War I and II. During these years, political developments occurring in the region of England, Hitler and Nazis were preparing for war against Europeans in Germany.

The role of Sir Winston Churchill is important to consider in this regard who pushed forward the British to retaliate to Germany for its plans of invasion. So, after the great world wars, the Great Britain suffered greatly economically and lost its grip on its colonies in major parts of the world. It was also the period when India and Pakistan gained independence from the colonial rule of Great Britain. During the 1970's, Labor Party started gaining power in Great Britain when the country was going through oil crisis.

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[22]   www.opengovpartnership.org/report/united-kingdom-mid-term-report-2016-2018-year-1

During the World War II, a committee chaired by Sir William Beveridge was set up to look into ways of improving the lives of the British people. Its Report (1942) recommended the government to set up a benefit system to help people from 'cradle to grave. Beveridge proposal and plans were put into practice, and so steps were taken to improve education, housing, and working conditions and there also was established a national health service (NHS). These reforms later on played a major role in making the Great Britain a welfare state.[23]

b. History of post-1945 era

After too many historical ups and down in 1945, the UK was accorded the status of being a welfare state where a program of insurance got started. Beginning from 1951, there were cycles of inflation and economic recession which damaged the economy of United Kingdom. By 1970, the Conservatives began to start their politics in the country, causing a major shift in the regional politics. However, the Labour Party were back. It faced from 1974 till 1979, various economic crises in the form of poor industrial growth. During this period, the country struggled a lot and finally came out of its economic turmoil and entered an age of economic prosperity.

It was during this period in which the country got densely populated along with becoming one of the major industrial states. It also underwent a process of urbanization and began building cities. Because of the huge number of industries being planted in the United Kingdom, the country had to suffer due to environmental pollution. Many people got inflicted from the 'Great Smog of London' in 1952, as it made many people victim of lungs and heart diseases. Along with the industrial and economic development there was rise of social issues. Increase in population of the country also brought to fore multicultural issues inside the Britain. The women began to work along with men workforce which created gender based issues. The UK society had to go through a massive change after the industrial revolution.[24] With the advancement in technology, the people started to enjoy themselves by using various devices like radio, television and telephone.

The period of 1950's was surely a period of great enlightenment and transformation for the people of Great Britain.[25] After the initiation

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[23]   www.bbc.co.uk/history/british/timeline/present_timeline_ noflash.html
[24]   Verhulst, S. &Young, A. (n.a.).*Open Data Systems.* Retrieved from <http://odimpact.org/key-findings.html>
[25]   M. Cole, *Political Parties in Britain* (London: Edinburgh University Press, 2012), 55-58.

of the Festival of Britain in 1950, the country underwent another era of change in the 1950s. After wining of the elections by Winston Churchill, the Conservatives had entered the arena of politics of UK. The period of 1956 was a huge success in terms of weapons of warfare for Britain because it established its nuclear power station. However, the year 1957 saw another transformation in the political development of the country when Ghana gained independence from the Great Britain. In 1957, Britain made its hydrogen bomb and joined the group of nuclear powers.[26] During the 1960's, UK achieved another landmark in social development by abolishing death sentence penalty in 1965. The UK achieved great success in sports in 1966. In 1973, Britain joined the European Economic Community (EEC), and in 1976 the Britain had to go to IMF, to seek loans. In 1978, a test-tube baby was born in UK. In 1979, a female Prime Minister Margaret Thatcher came into power, and Lord Mountbatten, a cousin of Queen got killed in a bomb blast.[27] During the 1980's, the country got into racial conflict. There were also cases of deaths arising due to famines triggered by some political tensions. In 1982, massive unemployment was caused by the period of great economic recession. Not only was it a huge recession economically, but it also put psychological pressure on the people.

In 1989, World Wide Web came to scene opening a door to a big world of endless possibilities.[28] After 1994, women were allowed into priesthood which was welcomed as a good decision. In 1997, another political development occurred when China got back Hong Kong from the UK.[29]

c.   History of post 9/11 Era: recent developments

The issue of rights of same-sex marriage in UK again rose during 2000's.[30] In 2010, the UK Government created the Open Government License, and public bodies could then opt to publish their Crown Copyright material under this license. Material marked in this way is available under a free, perpetual license without restrictions beyond attribution. This new license was based on, and designed to work with

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[26] R. Kitchin, *The Data Revolution: Big Data, Open Data, Data Infrastructures and their Consequences* (London: SAGE, 2014).

[27] R. Duss & M. Doorey, 'Importance of Open Data', in, L. Carolan, *Open Data Systems,* (We Forum: 2016), 27-34, Retrieved from GSDRC.

[28] B. Wessels & R. Finn, *Open Data and the Knowledge Society* (Amsterdam University Press, 2019).

[29] B. Jones & P. Norton, *Politics UK* (London: Routledge, 2014), 80-88.

[30] Amartya Sen, *Development as Freedom* (London: Oxford University Press, 2001): Vol. II, 40-45.

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Access to Public Data: The Case of Pakistan

The federal and provincial governments in Pakistan have been issuing various orders and laws pertaining to freedom of information. At the federal level these include:

a. Freedom of Information (FOI) Ordinance, 1997 (federal level), re-issued in 2002, and given legal protection under 17th Amendment in 2004

b. The 18th Amendment in the 1973 Constitution, added Article 19-A. It says: 'Every citizen shall have the right to have access to information in all matters of public importance subject to regulation and reasonable restrictions imposed by law.'

At the provincial level these include:

a. Sindh Transparency and Right to Information Act, 2016 (provincial level)

b. Khyber Pakhtunkhwa Right to Information Act (KPK RTI) 2013

c. The Punjab Transparency and Right to Information Ordinance, 2013

d. Baluchistan Freedom of Information Act, 2005

Potential of using 'Open Data' in Pakistani society

Pakistan being a third world country faces many social challenges. Some prominent ones are related to gender inequality, women's empowerment, education, unemployment, poverty, inflation, corruption, economic instability, and internal and external security threats. To tackle all these issues Pakistan can take effective measures if it adopts 'Open Data' system, like the United Kingdom. The model of UK 'Open Data' system is expected to be highly effective for the situation of Pakistan, as this system supports fighting the ills of society in real-time and provides reasonable solutions. Following are the dimensions necessitating adoption of 'Open Data' system for Pakistan.

a. Corruption: The foremost and the real power of 'Open Data' lies in the fact that it helps control corruption. With the power of real-time accountability the system makes the officials accountable by tracing any mishandling of the public data. With the passing of Right of information Act bill by the National Assembly of Pakistan in 2016, the government is restricting to make all public data open. Today corruption is no doubt is a grave threat for the economic stability and efficacy of the country.

National Accountability Bureau (NAB) and Federal Investigating Agency (FIA) are two major public sector organizations trying to check corruption. Both these organizations have their own cyber wing. Following the roadmap to adopting the UK and USA models the Pakistan, the government has introduced effective 'Open Data' system in order to arrest any person involved in cyber-crime.

b. Terrorism: The menace of terrorism has been crippling the state and society of Pakistan in the last two decades. USA was the first to use 'Open Data' system to tackle terrorist activities, followed by UK and then European Union. Open data helps in tracking the terrorist activities and enable the authorities to take quick actions on the very initial stage of information about terrorism. Since the 9/11 attacks, Pakistan became a non-NATO ally of 'war against terrorism', and it has been suffering as the war zone of terrorism, experiencing huge loss of life of civilian and security personnel. The think tank of country has been planning a number of strategies to combat terrorism; using 'Open Data' system being one of them.

c. Election: Election is a two way process where one candidate is on one side and huge public as voters on the other side. The recent census (2017) has created many questions regarding the transparency of counting the people. In many villages of Punjab and KPK, the strength of public is shown less than it actually is, as the complaints reported. Correct measurement of demographic features and trends are done through the census data, but it has been cast into doubts. Number of voters in certain village, election ward or constituency can be counted only by having access to the vital data already collected or being generated by the government agencies. The 'Open data' can greatly paly an effective role in showing the population of people in any region. For this NADRA[31] can play a vital role. If its data goes public it will help in determining and managing the demographic issues, especially that of elections, by knowing exact number of people living in certain locality or unit.

d. Health and education: Pakistan has been lagging behind the South Asian countries in numbers and standards when it comes to the social sector. Being basic social issues health and education reflect the standard and quality of human development, counted by Human Development Index. The recent outbreak of COVID-19 was globally tackled with the
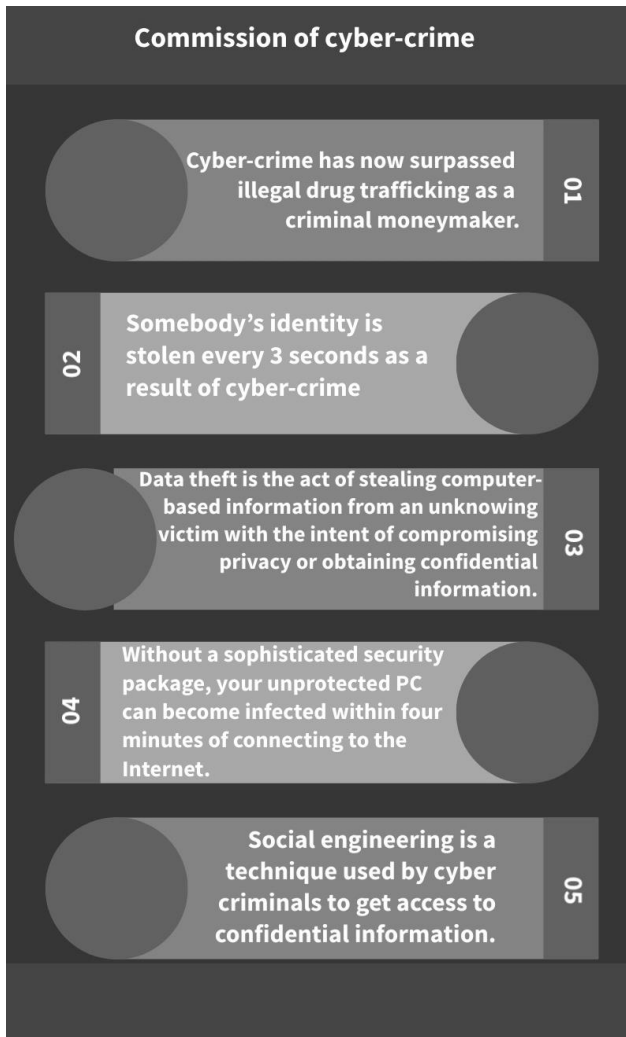
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[31]   National Database and Registration Authority, in Pakistan.

help of 'Open Data' when it came to knowing the number of cases and death. The power and influence of 'Open Data' has been widely acknowledged amid the coronavirus pandemic when countries using data sources and techniques found them helpful in overcoming the disease. 'Open data' can show the number of schools and teachers in real-time and also the presence and quality of doctors in any hospital. Based on government data for 2019, the gap between the numbers of boys and girls in educational attainment is at about 10 per cent; and this becomes notable from the 5th grade (nine years old) up to 12th grade (17 years old). Therefore, this information helps in improving the educational standard and closing the gender gap. Pakistan`s literacy rate is also low as compared to its neighboring countries. Bangladesh, which separated from Pakistan in 1971, now shows a better literacy rate. Nowadays, while switching to online learning, the 'Open Data' can help effectively in maintaining the standard of learning and teaching. Open Data system can also help in combating illiteracy in Pakistan.

e. Cyber-crime: With the growing power of social media many new challenges are emerging. The recent hybrid war which is also known as fifth generation war between India-Pakistan, as it has been strengthened by the power and use of social media. Cyber-crimes which include misuse of Internet for instance; to harass or threaten somebody or steal someone's data without his/her consent can be managed easily with the help of 'Open Data'. The experience of UK reflects that this can be achievable in Pakistan as well. In cyber-crime there comes all the activity related to usage of internet or electronic medium. It can include the distant theft of information belonging to an individual, government or corporate sector through criminal tress-passing into unauthorized remote systems around the world. It includes acts ranging from stealing millions of rupees from online bank to harassing and stalking cyber users. Cyber-crimes also include sending viruses in different systems or posting defamation messages. Commission of cyber-crimes has assumed an alarming proportion because:

    a) Cyber-crime has now surpassed illegal drug trafficking as a criminal moneymaker.
    b) Somebody's identity is stolen every 3 seconds as a result of cyber-crime.
    c) Without a sophisticated security package, your unprotected PC can become infected within four minutes of connecting to the Internet.

The detail of forms of cyber-crimes is illustrated in Figure E.

Figure E: Commission of Cyber-Crimes

Commission of cyber-crime

01 — Cyber-crime has now surpassed illegal drug trafficking as a criminal moneymaker.

02 — Somebody's identity is stolen every 3 seconds as a result of cyber-crime

03 — Data theft is the act of stealing computer-based information from an unknowing victim with the intent of compromising privacy or obtaining confidential information.

04 — Without a sophisticated security package, your unprotected PC can become infected within four minutes of connecting to the Internet.

05 — Social engineering is a technique used by cyber criminals to get access to confidential information.

Source: Designed by the author

With social engineering, attackers use manipulation and deceit to trick the victims into giving out confidential information. Data theft has become increasingly a big problem for individual computer users, as well as big corporate firms. The following categories are most common in data theft cases. Identity theft refers to a crime where an individual maliciously obtains and uses another individual's personal/sensitive information to commit frauds/scams by using the 'stolen' identity. Mostly this crime is committed for economic gain. The criminals gain access to an individual's information by stealing e-mail details, stored

information on computer databases; they eavesdrop over the networks to get hold of transactions. All these crimes can be tackling easily with the help of 'Open Data'. Country like UK has done it successfully. Especially during COVID-19 many fake news circulated and with the presence of 'Open Data' all these fake stories were easily tackled and thus it helped in stopping chaos in the society

Obstacles in widespread use of 'Open Data' in Pakistan
The main obstacle in Pakistan in using of 'Open Data' is the lack of understanding as to what it is. There is also the non-serious attitude of government when it comes to any positive use of technology. Today all the developed countries are using new digital tools to combat ills in their society. Pakistan still lags behind as compared to other developing countries in term of using technology. Basically a 'political will' is missing in the whole equation. No doubt at the individual level there are many genius Pakistanis who are excelling in technology but on the government level there is little motivation and support for them. Nevertheless, if only the investigative journalists learn the skill to use 'Open Data', many positive changes can be made.

Recommendations
The open data system drive is, of course, having a very strong influence on the higher authorities at the government level to make information available in a transparent way for social and political developments. The recent COVID-19 outbreak has also reflected the importance and power of 'Open Data' system for good governance. Following are the approaches to expand the open data at governmental level, including:
- Introducing latest technologies for public awareness
- Engaging the common public and enhancing their participation through sharing of information
- Ensuring an enhanced environment for open data in the government and private sectors management
- Developing a common valuation framework so that value of a person can be measured.
- Conducting scientific research extensively so that information becomes available and a process of inventions and innovations may get started in the country.