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Sharing Government-Owned Data with the Public: A Cross-Country Analysis of Open Data Practice in the Middle East

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ABSTRACT

Since 2009, open government policies, open data, and social media use in government have been actively promoted by democratic governments around the world to promote the goals of government transparency, citizen engagement, and collaboration. To date, however, there is a lack of empirical research into open government practice. This knowledge gap has managerial and public policy implications for democratic governments and, importantly, for the governments in the Middle East in which explosive growth has occurred in the number of users of the Internet and social media. This research attempts to reduce this gap by examining the maturity level in open data implementation across the governments in the Middle East. In this research the maturity level was measured using the eight principles for open government data implementation practice proposed by the 2007 Open Data Working Group. The key findings from website survey analysis on open data practices and plausible reasons are discussed.

Keywords

Open data practice, open government, Middle East, e-government.

INTRODUCTION

Open government policies, open data, and social media use in government have been actively promoted in the recent years by democratic governments around the world. While the US Federal Government was the first mover in articulating the open government policy's transparency, citizen participation, and collaboration outcomes in the US Open Government Directive of 2009 (US Executive Office 2009), open government practices have now spread to other developed nations such as the UK, Australia, Japan, and South Korea, as well as developing nations including, Indonesia, Mexico, and Egypt. Globally, Open Government Partnership (OGP) has now 46 nations which are committed to collaborate towards improving transparency, accountability, and citizen participation in government (OPG 2012). To date, however, there is a lack of empirical research into open government practice. This knowledge gap has managerial and public policy implications for democratic governments and, importantly, for the governments in the Middle East in which explosive growth has occurred in the number of users of the Internet and social media. The "social media revolution" – especially through ubiquitous use of Web 2.0 social media channels and social networking platforms – played a significant role in the recent widespread civil uprisings against the governments in the "Arab Spring". The political power of social media in the emerging open government policy environments in the Middle East is making a significant impact on changing not only personal lives but also political and social dynamics of the way citizens become more aware of the emergence of open government initiatives by democratic governments around the world, potentially driving citizen demands for more transparent and open access to government-owned data to enhance quality of personal lives in the Middle East.

This research, therefore, attempts to fill this knowledge gap by examining the implementation of open data policies in the governments in the Middle East as the pertinent part of open government practice. More specifically, we address two research questions:

1. How do the governments in the Middle East compare with regard to the level of maturity in sharing government-owned open data with the public? Are they making the same rate of progress?

2. If not, what factors may explain the observed differences in open data practice? How does the level of maturity in open data practice in the Middle East relate to existing socio-technological measurements at the national level, such as Internet penetration rate per population and the number of social media users, as well as social media use in government?

The remainder of this paper is structured as follows: the next section presents a literature review of open government policies, open data, public value of open data, and first movers leveraging open data. The subsequent section briefly describes our website survey research methodology for addressing the research questions. The section after that presents our website survey analysis results and attempts to explain the results by means of an analysis of the socio-technological measurement data from the secondary sources. The final section is our conclusion.

LITERATURE REVIEW

Electronic government research is a multi-disciplinary domain of action and study which address “the use of information and technology to support and improve public policies and government operations, engage citizens, and provide comprehensive and timely government services” (Scholl & Luna-Reyes 2007, p. 21; Scholl & Luna-Reyes 2010). While e-government research on open government initiatives are emerging, including empirical research on formal assessment of citizen informational needs for the open government initiatives in Egypt (Klischewski 2012) and the simulation modelling in Mexico (Scholl & Luna-Reyes 2010) as well as various government progress reports on open government initiatives, for example, in Australia (Report of the Government 2.0 Taskforce 2009) and in Japan (METI Open Government of Japan 2009), there is a general lack of empirical research into open government practice. From an e-government research perspective, this research addresses emerging open data practice in the Middle East by means of a cross-country analysis and the plausible reasons for the emergent similar or different open data implementation practices. In this section, we briefly review the literature on open government policies, open data, public value of open data, and first movers worldwide in leveraging open data.

Open Government Policies

In this section, we briefly discuss open government policies in the US and Australia to understand the strategic purpose and goals of open government. In this paper we examine Australian policies in the Asia-Pacific region, because Australia is one of the early adopters of participatory open government and open data policies with the declaration of Open Government in July 2010 (Australian Government Department of Finance and Deregulation Australian Government Information Management Office 2010). In the US, the Open Government Directive of 2009 aimed to promote government transparency, citizen participation, and collaboration across government’s internal and external stakeholders in public policies and government services. In order to achieve the goals of enhancing democracy and transforming policy making and public service delivery at the Federal Government level, the participatory open government policies identify the needs to create a culture of openness in the government agencies, to share the government-owned data with internal and external stakeholders, and to promote the use of social media channels in government for better interaction and communication (Open Government Status Report 2011). On January 21, 2009, President Obama declared his administration’s Open Government Initiative: “My administration is committed to creating an unprecedented level of openness in Government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration. Openness will strengthen our democracy and promote efficiency and effectiveness in Government.” Similarly, Australia’s Government 2.0 Taskforce has published a report in which the Minister (Lindsay Tanner) responsible for the Taskforce declared on July 16, 2010 that the Australian Government is committed to the concept of open government – openness and transparency in government – to promote greater participation in Australia’s democracy. The openness and transparency in government has three key principles:

- Informing: enhancing citizen’s rights of better access to government held information, establishing a culture of openness and engagement across Australian Government agencies, and encouraging citizen’s reuse of open data in new, valuable and potentially innovative ways making government held open data more accessible and usable for online innovation;
- Engaging: collaborating with citizens on policy and service delivery design to enhance the public administration processes and improve the performance outcomes;
- Participating: making government more consultative and collaborative.

Towards the goals of open government, government agencies in Australia are required to develop action plans that “reduce barriers to online citizen engagement, undertake social networking, crowd sourcing and online collaboration projects, and support online engagement by employees”. The open government initiative aims to empower Australians; give citizens more of a say in the way the policies are made and the public services are delivered that impact their lives. It also aims to enable government agencies and individual public servants to be more innovative and more responsive to public input and feedback.

Because the successful outcomes of open government depend on the innovative use of new Web 2.0 technologies such as social media, government agencies are required to develop policies that support employee-initiated, innovative Government 2.0-based projects that help achieve the goal of open government. The Australian Government views Government 2.0 as the means to achieve an end of open government.

Open Data

Open Government Working Group (2007) proposed that government data would be considered open if the data are made public in a way that complies with the following eight principles for open government data implementation practice. They are: (1) complete data; (2) primary data; (3) timely data; (4) accessible data; (5) machine processable data; (6) non-discriminatory access to data; (7) non-proprietary data formats; and (8) license-free data. These principles facilitate best practice in open data implementation in the way which governments become more effective, transparent, and relevant to citizens' lives (Open Government Working Group 2007). Given the paucity of generally accepted evaluation methods in the literature, these eight principles were adopted as relevant and useful guidelines in evaluating open data implementation practice in this research. We consider government-owned data as open if they are made public in a way which complies with these principles. Given the sharp rise of text data and text data mining as a result of increased government reports and social media use in government, we also broadly consider text data in the fifth principle whether or not text data can be machine processable directly through software tools such as content analysis and social media analytics. Furthermore, in this research we assume that the more the government complies with the principles, the more mature the government's open data implementation practice is.

Public Value of Open Data

With the vast amount of government-owned data, the potential – and the need – for public value in having these data made public has never been greater for open data implementation. There are a wide range of areas in which open data are creating value for the government. Open Data Manual (2011) identifies the following public value:

- Transparency and democratic control
- Participation
- Self-empowerment
- Improved or new private products and services
- Innovation
- Improved efficiency of government services
- Improved effectiveness of government services
- Impact measurement of policies
- New knowledge from combined data sources and patterns in large data volumes.

With regard to transparency, for example, projects such as the Finnish 'tax tree' and the British 'where does my money go' show how the tax money is actually being spent by government. In addition to these areas of public value creation, World Economic Forum (2011) argues that the greater public value of open data for open government is created by reusing open data, including enhanced data visualization in analysis and presentation, by private-sector firms for commercial value as well as by the public. New public value creation is possible because government-owned data provide an essential resource for business and technological innovations and socio-economic developments in the information society. Several studies have estimated the economic value of open data at several tens of billions of Euros annually in the European Union alone (The Open Data Manual 2011).

First Movers Worldwide In Leveraging Open Data

Many governments around the world have started the race to put their countries on the open government data map. The international efforts for open data practice are facilitated by many organizations and initiatives such as "open data.gov" (www.data.gov) – an official open government data website of the United States Government which serves as a hub for the open government community around the world (Open Government Data 2012). Figure 1 shows the countries that have open data platforms. However, a review of the literature on open data implementation clearly shows the lack of empirical research on these first movers with regard to either a single country case analysis or a cross-case analysis. It also shows the lack of research on open data implementation in the Middle East, where there has been a sharp increase in the use of the Internet and social media among citizens and the governments have experienced the different levels of success in improving public services and citizen engagement through e-government websites and portals (Chatfield & Al Hujran 2009).



Figure 1: International Open Data Sites Source: <http://www.data.gov>

RESEARCH METHODOLOGY: WEBSITE SURVEY ANALYSIS

We use website survey analysis to address the two research questions. The first question is concerned with the comparison of emergent open data practices in the Middle East. While there are different definitions of the Middle East (e.g. United Nations, World Bank, and Wikipedia), we have conducted an initial evaluation of thirteen (13) Middle East countries: Saudi Arabia, Kuwait, Bahrain, Qatar, United Arab Emirates (UAE), Oman, Yemen, Jordan, Israel, Iran, Syria, Lebanon and Iraq. Google search engine was used to find each country’s main e-government website/portal and dedicated open data website. During the data collection phase, we found many different e-government websites in each country. Using the eight open data principles we systematically surveyed all these websites to gain a full understanding of open data practice, using both Arabic and English, if the latter is available. The same search keywords (in Arabic/English), such as ‘open government’, open data’, government data’ and ‘public data’, were used consistently in evaluating each country’s e-government websites/portals. The searching process inside each portal was accomplished in two steps. The first step was to use the portal’s search engine, which was followed by the second step using ‘Google Site Search’ to ensure the search accuracy and completeness. In all the 13 counties, we were looking for any open data available. Table 1 lists the countries, available languages, and main e-government websites/portals we surveyed.

	Country	Available Languages	E-government Portal
1	Saudi Arabia	Arabic/English	http://www.saudi.gov.sa
2	Kuwait	Arabic/English	http://www.e.gov.kw
3	Bahrain	Arabic/English	http://www.bahrain.bh
4	Qatar	Arabic/English	http://portal.www.gov.qa
5	UAE	Arabic/English	http://www.government.ae
6	Oman	Arabic/English	http://www.oman.om
7	Jordan	Arabic/English	http://www.jordan.gov.jo
8	Israel	Arabic/English /Hebrew	http://www.gov.il
9	Iran	Arabic/English/ Persian/ French/ Urdu/ Spanish	http://www.president.ir
10	Syria	Arabic	http://www.e.sy/
11	Yemen	Arabic	http://www.yemen.gov.ye

12	Lebanon	Arabic/English/French	http://www.informs.gov.lb
13	Iraq	Arabic/English	http://www.egov.gov.iq

Table 1: A list of e-government portals surveyed in the Middle East

RESULTS

In this section we discuss our website survey analysis results to answer the first research question and secondary data analysis results for exploring the second research question.

Research Question 1: Level of Maturity in Open Data Practice in the Middle East

After making a preliminary search into the availability of open government data during the period of October 2011-January 2012, ten countries were excluded for further analysis, because their main e-government website/portal failed to provide any evidence of open data implementation either in Arabic or English. There are countries in the Middle East such as Kuwait, Oman, and Israel which have made progress towards open government, for example, through participation in the Open Government Partnership. However, with regard to actual implementation, it was found that only three countries have made government-owned data public: United Arab Emirates (UAE), Bahrain, and Saudi Arabia. Table 2 below shows the findings of the website survey analysis of the thirteen countries. The findings are consistent with the 2011 World Economic Forum Report, which has identified these three countries in the Gulf Cooperation Council (GCC) region as having adopted a holistic approach to developing their action plans and having achieved some tangible outcomes, however with various degrees of success (World Economic Forum 2011). According to their Arabic e-government websites/portals, Bahrain, UAE and Saudi Arabia consider open data as an essential means for promoting government transparency and facilitating public participation and engagement with the government. For example, the UAE government states that in addition to enabling citizen engagement, open data will increase not only government transparency but also the overall public value the government creates and delivers to its citizens (United Arab Emirates Portal 2012).

Country	Open Data
Saudi Arabia	Yes
Kuwait	No
Bahrain	Yes
Qatar	No
UAE	Yes
Oman	No
Jordan	No
Israel	No
Iran	No
Syria	No
Yemen	No
Lebanon	No
Iraq	No

Table 2: Open Data in Middle East

Through website analysis, it was also found that the three countries had used different strategies in implementing open data. On the one hand, both UAE and Saudi Arabia have made their data public using a direct link from the main e-government portal. They have dedicated sections for open data within their national e-government portals. While UAE portal offers a convenient way of finding certain open data by providing a search tool to search for specific information, the only way to find data of interest through the 'Saudi' e-government portal is to browse through all the listed information. The 'Saudi Open Data' consist of documents and spreadsheets files that contain government statistics, policies, reports, and case studies that are collected from all the government agencies and ministries. On the other hand, Bahrain developed a dedicated website called the 'Open Data Platform' – an important initiative for Bahrain which is very similar in concept to the US open data

platform, “data.gov” – for making government-owned data public. Bahrain’s Open Data Platform aims to enhance government transparency by implementing a public data hub (Open Data Platform 2012). The main goal of the Open Data Platform is to publish datasets owned by ministries and government agencies and make these data available to the public. Bahrain’s Open Data Platform also provides a mechanism for promoting public feedback on open data, as well as providing the public with guidelines on how the data platform can be used.

The maturity level of open data implementation in the three countries was further evaluated using the eight principles discussed earlier in this paper’s literature review section. Table 3 shows our findings. The eight principles for open data are listed in the first column. Table 3’s next three columns show the three countries. We assume that the greater the number of ‘Yes’ found in the country column, the more mature the government’s open data practice.

The Measuring Principles	Bahrain	UAE	Saudi Arabia
1. Data Must Be Complete	Yes	Yes	Yes
2. Data Must Be Primary	Yes	Yes	Yes
3. Data Must Be Timely	Yes	Yes	Partly
4. Data Must Be Accessible	Yes	Partly	Yes
5. Data Must Be Machine Processable	Yes	Yes	Yes
6. Access Must Be Non-Discriminatory	Yes	Yes	Yes
7. Data Formats Must Be Non-Proprietary	Partly	Partly	Partly
8. Data Must Be License-Free	Yes	Yes	Yes
Level of Maturity (# of Yes)	7.5	7.0	7.0
Yes = 1.0; Partially = 0.5			

Table 3: level of maturity in open data implementation for Bahrain, UAE and Saudi Arabia

With regard to the first principle: ‘Data Must Be Complete’, the three countries have made data publicly available and data are stored electronically. The three countries satisfy the second principle: ‘Data Must Be Primary’ because they are publishing data that were collected at the source without any modification made on the data (row data). With regard to the third principle: ‘Data Must Be Timely’, Bahrain and UAE satisfy this principle by making it mandatory to preserve the value of the data in a reasonable time frame. While Bahrain provides open data from 2001 to 2011, UAE provides open data from 1998 to 2011. However, Saudi Arabia only partially satisfies the principle, by having made open data public from 2006 to 2009. This seems to reduce the potential public value of open data by limiting the usability of government-owned data for the public. To satisfy the fourth principle: ‘Data Must Be Accessible’ principle, all the data should be published without any limit of access or any barrier to limit the access of these data. Also, the published data should cover widest range of purposes. Both Bahrain and Saudi Arabia satisfy this principle. However, UAE open data practice is limited to a selective number of government agencies. The three countries satisfy the fifth principle: ‘Data Must Be Machine Processable’ because they provide their data on formats that can be processed by computers. The three countries satisfy the sixth principle: ‘Access Must Be Non-Discriminatory’ because public access to open data requires neither fees nor registration or sign-up. However, we have not evaluated the three countries’ open data practice for citizens with physical handicaps. The seventh principle: ‘Data Formats Must Be Non-Proprietary’ has challenged all three countries. This principle is only partially complied by the three countries. This is because all three countries provide some of their open data in a closed proprietary format which means that the public are required to acquire compatible proprietary software such as Microsoft Excel to open the data file. For example, the Saudi open data are provided only in XLS format. The Bahrain open data are provided in XLS or PDF format depending on the type of the data. The UAE provides its open data in four different formats: XML, DOC, PDF, and XLS. These formats will satisfy the variety of data types that are provided by the UAE government. Finally, the three countries satisfy the eight principles: ‘Data Must Be License-Free’, because these governments’ data are made public without any licensing requirement for access and re-use. Overall, the three countries show a high level maturity in open data practice when the level of maturity was assessed against the eight principles.

Research Question 2: Factors Associated with Maturity Level in Open Data Practice

We addressed the second question using secondary data analysis, particularly an analysis of relevant socio-technological measurements such as internet penetration per population, social media use in government, and the number of social media users. Table 4 below shows the Middle East Internet Usage statistics for the thirteen countries as of December 2011. The

Table shows five columns: countries, estimated population, Internet users, Internet usage, and Internet penetration rate (measured as percentage of Internet users per estimated population). Table 4 shows that the data on the thirteen countries in the Middle East are sorted on the basis of the internet penetration rate in the fifth column. The three countries, which are considered as having achieved a high level maturity in open data implementation practice, are found to have the Internet penetration rate that is either very high for UAE (69.0%) or high for Bahrain (57.1%) and Saudi Arabia (43.6%). In answering the second question, we argue that the Internet penetration rate may be associated at least partially with a successful open data implementation practice. Since the Internet Penetration rate reflects citizen and market demands for web-based services such as e-government and e-commerce. Governments with high-level Internet penetration rate are better prepared to respond to these citizens and market demands by supplying government-owned open data. However, Israel, Qatar, Oman and Iran have higher Internet penetration rate than some of the three countries with higher maturity level in open data implementation. However, on the basis of the Internet penetration rate alone, we cannot explain why these four countries have not shown an observable evidence of active open data practices that are as high as or higher than those of UAE, Bahrain and Saudi Arabia. Other factors than the Internet penetration rate must be considered.

Countries	Est. Population	Users	Internet Usage	Penetration % Population
Israel	7,473,052	1,270,000	5,263,146	70.4%
UAE	5,148,664	735,000	3,555,100	69.0%
Qatar	848,016	30,000	563,800	66.5%
Oman	3,027,959	90,000	1,741,804	57.5%
Bahrain	1,214,705	40,000	694,009	57.1%
Iran	77,891,220	250,000	36,500,000	46.9%
Saudi Arabia	26,131,703	200,000	11,400,000	43.6%
Kuwait	2,595,628	150,000	1,100,000	42.4%
Lebanon	4,143,101	300,000	1,367,220	33.0%
Jordan	6,508,271	127,300	1,987,400	30.5%
Syria	22,517,750	30,000	4,469,000	19.8%
Yemen	24,133,492	15,000	2,609,698	10.8%
Iraq	30,399,572	12,500	1,303,760	4.3%

Table 4 Middle East Internet Usage Statistics 31 December 2011

As we have briefly discussed the role of Government 2.0 in the open government and open data policies environment, we now address the second question through an analysis of social media use in the governments of UAE, Bahrain, and Saudi Arabia. Table 5 shows how governments in Saudi Arabia, UAE, and Bahrain use social media such as YouTube, Facebook, and Twitter. The level of social media use seems to vary across the governments; high in UAE and Saudi Arabia and limited in Bahrain. However, the domain of social media use is very limited to e-government updates, current news, and government official press conference releases. Moreover, while some governments provide a means for public feedback and comments, governments are not highly interactive with the public in terms of the speed and frequency of news updates and the number of tweets to the public.

	Saudi Arabia	UAE	Bahrain
YouTube	Complete tutorial about all the e-services with comments ability from the public.	News about new e-services, and interviews with some UAE government officials, as well as comments from the public.	Only interviews with some Bahraini officials with comments from the public.
Facebook	A lot of current news about Saudi Arabia (in addition to news on e-government). Very low level	Only news about UAE e-government. Some limited discussions with UAE officials.	Only news about Bahrain e-government. Great numbers of discussions with officials.

	government interaction with the public.		
Twitter	Tweets about government agency activities. Unlike UAE, news is not very frequently updated; about one tweet every day.	Huge volume of tweets on news. Tweets on average of every 2 hours. Very fast updating.	Huge volume of tweets on news.

Table 5: The use of social media in Saudi Arabia, UAE and Bahrain

Table 6 below shows the number of Facebook users and Facebook user penetration (% of the population) for the 13 countries in the Middle East in December 2011. Data are not available for Iran and Syria. For the remaining 11 countries, Saudi Arabia, Israel and UAE in terms of market size lead the Middle East with a big margin. In contrast, Facebook uptake in Bahrain seems to lag behind other countries in the Middle East. These statistics are consistent with the level of social media use by the governments of UAE and Saudi Arabia vis-à-vis Bahrain in Table 5. However, either of these statistics does not fully explain the existing open data implementation practices and the level of maturity in implementation.

Countries	Facebook Users	Penetration % Population
Saudi Arabia	4,534,760	17.4%
Israel	3,366,440	45.0%
UAE	2,769,020	53.8%
Jordan	1,987,400	30.5%
Lebanon	1,367,220	33.0%
Iraq	1,303,760	4.3%
Kuwait	880,720	33.9%
Oman	362,280	12.0%
Qatar	323,280	38.1%
Yemen	318,420	1.3%
Bahrain	316,340	26.0%
Iran	n/a	n/a
Syria	n/a	n/a

Table 6 Middle East Facebook Users in December 2011

DISCUSSION AND CONCLUSION

Open government policies, open data, and social media use in government have been actively promoted in the recent years by democratic governments around the world. Globally, open government partnership has now 46 nations which are committed to collaborate towards improving transparency, accountability, and citizen participation in government (Open Government Partnership 2012). While there is the emergence of open government research (Scholl & Luna-Reyes 2007; Scholl & Luna-Reyes 2010) in the single country context which provides new insights into open government implementation issues and challenges, there is the general lack of empirical research into open data implementation practice, particularly international comparison of open data practices in the e-government literature. While international comparative analysis of open data policies and practices in the European Union context is emerging (Janssen 2011), extant knowledge gap is not only limited to the first movers of open data practice but also to others in the developing countries that have embraced open data policy and practice. The knowledge gap, therefore, has managerial and public policy implications for democratic governments and, importantly, for the governments in the Middle East. In this research we have attempted to reduce this gap by examining extant open data practices in the Middle East.

In conducting the website survey analysis both in Arabic and English, we initially examined national e-government websites or portals of thirteen countries in the Middle East. Against our expectations, we found only three countries (United Arab Emirates, Bahrain and Saudi Arabia) which have demonstrated an observable evidence of open data implementation along the plausible pathways from adopting participatory open government and open data policies. Of the three countries, we

further evaluated the level of maturity in open data implementation using the eight principles for open government data implementation practice proposed by the 2007 Open Data Working Group. It is found that of the three countries the level of maturity in open data implementation seems to be virtually similar but United Arab Emirates is slightly scored higher than that of Bahrain and Saudi Arabia; they have successfully managed the transition from the development of open data policies to actual open data implementation practice. While an analysis of the secondary data source conducted in this research did not fully answer our second question, the three countries tend to show higher level Internet penetration rate and higher number of social media users, particularly Facebook users, among their citizens than those of the rest of the Middle East countries. However, there are observable exceptions to this finding. Therefore, our current research has some limitations with regard to the research methodology; namely, the use of the eight open data principles which still lack operationalization and the analysis of the limited secondary source data. Our future research directions include identifying more rigorous and operationalized criteria for evaluating open data implementation practices and identifying salient factors that would explain the variances in open data practices.

REFERENCES

- Atari, S. E., et al. (2011) *Web 2.0 in Next-Generation Government and Governance: A Middle East Point of View*, CISCO, http://www.cisco.com/web/about/ac79/docs/ps/Web_2-Mid-East-Governance_IBSG.pdf.
- Australian Government Department of Finance and Deregulation Australian Government Information Management Office (2010) Declaration of Open Government, <http://www.finance.gov.au/e-government/strategy-and-governance/gov2/declaration-of-open-government.html>.
- Chatfield, A.T. and Al Hujran, O. (2009) A cross-country comparative analysis of e-government service delivery among Arab countries," *Information Technology for Development*, Vol. 15, No. 3, 149-170.
- Digital Daya (2011) *World Leader Rankings on Twitter*, http://www.digitaldaya.com/admin/modulos/galeria/pdfs/67/151_6zn39wrk.pdf.
- METI Open Government of Japan (日本経済産業省オープンガバメント) (2009) Policy for Open Government of Japan, Ministry of Economy, Trade, and Industry, <http://www.meti.go.jp/>.
- Janssen, K. (2011), The influence of the PSI directive on open government data: An overview of recent developments, *Government Information Quarterly*, 28, 446-456.
- Klischewski, R. (2012) 'Identifying Informational Needs for Open Government: The Case of Egypt', In Proceedings of IEEE.
- Mergel, I. (2010) 'Gov 2.0 revisited: Social media strategies in the public sector', *American Society of Public Administration*, 33, 3, 7.
- Open Data Platform (2012) viewed 20/2/2012 <http://www.data.gov.bh>
- Open Government Data (2012) viewed 17/2/2012 <http://opengovernmentdata.org/>
- Open Government Status Report (2011) *The Obama Administration's Commitment to Open Government: Status Report*, http://www.whitehouse.gov/sites/default/files/opengov_report.pdf.
- Open Government Partnership (2012) Making government transparent with open source web content, January 5, 2012, <http://www.opengovpartnership.org/making-government-transparent-open-source-web-content>.
- Open Government Working Group (2007) *8 Principles of Open Government Data*, viewed 17/2/2012 <http://www.opengovdata.org/home/8principles>
- OPG (2012) *The Open Government Partnership*, viewed 19/2/2012 <http://www.opengovpartnership.org/countries/israel>
- O'Reilly, T. (2007) 'What is Web 2.0: Design patterns and business models for the next generation of software', *Communications & Strategies*, 17-37.
- Osimo, D. (2008) *Web 2.0 in government: why and how*, Institute for Prospective Technological Studies (IPTS), JRC, European Commission, EUR, Luxembourg <http://ftp.jrc.es/EURdoc/JRC45269.pdf>.
- Report of the Government 2.0 Taskforce (2009) *Engage: Getting on with Government 2.0*, <http://www.finance.gov.au/publications/gov20taskforcereport/doc/Government20TaskforceReport.pdf>.
- Saudi E-government National Portal (2011) viewed 1/11/2011 <http://www.saudi.gov.sa>
- Scholl, H. & Luna-Reyes, L. F. (2007) 'Uncovering Dynamics of Open Government, Transparency, Participation, and Collaboration', In Proceedings of IEEE.
- Scholl, H. J. J. & Luna-Reyes, L. F. (2010) 'Transparency and openness in government: a system dynamics perspective', In Proceedings of ACM.
- The Open Data Manual (2011) viewed 17/2/2012 <http://opendatamanual.org/>
- United Arab Emirates Portal (2012) viewed 28/11/2011 <http://www.government.ae>
- US Executive Office (2009) *Open Government Directive*, USA, http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf.
- World Economic Forum (2011) *The Future of Government: Lessons Learned from around the World Global Agenda*, Switzerland, http://www3.weforum.org/docs/EU11/WEF_EU11_FutureofGovernment_Report.pdf.