

Spring 4-9-2014

A Grounded Theory Of Open Government Data: A Case Study In The UK

Azmi Omar

The Robert Gordon University, Aberdeen, Scotland, a.omar@rgu.ac.uk

Julian M. Bass

The Robert Gordon University, Aberdeen, Scotland, j.m.bass@rgu.ac.uk

Peter Lowit

The Robert Gordon University, Aberdeen, Scotland, p.lowit@rgu.ac.uk

Follow this and additional works at: <http://aisel.aisnet.org/ukais2014>

Recommended Citation

Omar, Azmi; M. Bass, Julian; and Lowit, Peter, "A Grounded Theory Of Open Government Data: A Case Study In The UK" (2014).
UK Academy for Information Systems Conference Proceedings 2014. 17.
<http://aisel.aisnet.org/ukais2014/17>

This material is brought to you by the UK Academy for Information Systems at AIS Electronic Library (AISEL). It has been accepted for inclusion in UK Academy for Information Systems Conference Proceedings 2014 by an authorized administrator of AIS Electronic Library (AISEL). For more information, please contact elibrary@aisnet.org.

A GROUNDED THEORY OF OPEN GOVERNMENT DATA: A CASE STUDY IN THE UK

Azmi Omar, Julian M. Bass and Peter Lowit

School of Computing Science and Digital Media
Robert Gordon University, Aberdeen, Scotland, UK.
Email: a.omar@rgu.ac.uk

ABSTRACT

This paper explores the emergence and implementation of Open Government Data (OGD) as a part of e-government systems in public organisations. OGD has become a new approach and phenomenon among developed countries to increase the citizen's trust and confidence in government. Several studies have shown the importance of implementing open data systems by public organisations and the potentials of open government data systems for better management. Grounded theory approach is used to build a theory by using semi-structured interviews: 5 interviews in the UK as a pilot study comprising 4 interviewees from local governments and 1 interviewee from a large national organisation in London. We found that OGD could optimise the performance of government's administration by using potential opportunities that OGD presents to them despite challenges like data sharing, standardization in OGD, government responsibility and public awareness. We envisage that as OGD evolves over time, participation and responses from public organisations, especially from large organisations, would represent the practice of OGD as a whole. This could positively contribute to the transparency and openness of the government and consequently increase the confidence level and trust of the people.

Keywords: open government data; public organisation; grounded theory

1.0 INTRODUCTION

Since 2008, most developed countries have started implementing a new approach which is Open Government Data (OGD) to increase the transparency and openness of the government to the citizen for the distinct purpose of improving and perfecting the government process. There are many areas of OGD implementation that government is expected to focus on such as transparency, economic benefit, data protection or

civil society. Different countries have different approaches, and focus on what they are to solve; for example, the UK use of open data to strengthen law enforcement as well as build a more transparent and civil society. The United States also focuses on transparency to increase public engagement, Germany on the other hand focuses on data protection while Denmark targets the development of new products and services. Finally, the Netherlands focuses on implementing the economic potential of OGD (Huijboom and Van den Broek, 2011). The practice of OGD should therefore change the stakes for government and the public as well as for entrepreneurs, businesses, and researchers.

Open data services could speed up the development of business as well as to enhance public service delivery and improve the quality of life. At the same time, it could enable citizens to know government activities, actions and spending as well as participate in the political process (Janssen, 2011). Thus, OGD is considered vital for transparency, economic development, interoperability, innovation and accountability that make government information available on the Web to the public (Rojas et al, 2013)

The focus of this paper is on investigating the implications of this new approach to government and research work contribution to the literature on OGD as a developing area by exploring the issues associated with its implementation by public organisations. The implementation of OGD is still new in many countries, especially in developing countries, and OGD projects have sprung up in countries around the world from the United States, Australia and New Zealand to The Netherlands, Sweden, Spain, Austria and Denmark (Sheridan and Tennison, 2010). The implementation of OGD could increase efficiency, effectiveness, transparency, accountability and public trust, as well as help to provide the public with knowledge of the government, society, and the economy for the past, present, and future.

In attempting to explore the implementation of OGD in public organisations, the authors of this paper seek to enhance and improve both the understanding and knowledge of OGD implementation in practice. A brief literature review of the problem domain is discussed in the next section about Open Government Data, and

then followed by the research methodology used in this study. The findings are presented in section four and in section five; the paper discussed the implementation of Open Data Government in the public organisation. Finally, the conclusion and further work are explained in the section six.

2.0 OPEN GOVERNMENT DATA

The meaning of "open" in Open Government Data (OGD) draws upon successive experiments with openness across a number of fields of endeavour. Distinct from "open data", narratives of "open government" have generally been understood as a reaction to long-standing cultures of governmental secrecy and to the limited scope for citizen participation in policy making (Davies and Bawa, 2012). Open data is about the openness of data, not the applications and source code (Lindman et al, 2013). Most organisations and people thought that the government would disseminate and display all the data stored by them, such as health data, patient information, security of the nation or other confidential data. However, for the open government data approach, only basic data will be disseminated such as transport, culture, environment, science, weather, financial, geographic and statistics data (OKF, 2012).

OGD represents the government's approach to enhancing the capacity and effectiveness of public services by providing transparent services. Transparency in government administration can increase productivity and the confidence level of the public in government. It should also encourage the public to participate in democratic decision-making which in turn makes the government understand public opinion and can predict public reactions to a decision (Kalampokis et al, 2011). With the new technology, collaboration between public and government can help bridge the chasm in issues ranging from climate change to patents. In the era of OGD, government is no longer the sole decision-maker because collaboration among businesses and citizens can contribute their expertise, skills and knowledge to the process of making better government policies (Noveck, 2009). Furthermore, collaboration with businesses can stimulate economic growth, innovation and entrepreneurships that encourage businesses to exploit the open data.

The nature of OGD means that in order to for it to be successful, a diverse range of tasks needs to be considered. This refers to the coordination and cooperation from many parties such as business communities, public, politicians and government officers. Therefore, government should be more transparent and get more participation from citizens in various processes to address their needs especially in the political process (Kassen, 2013). Furthermore, the public have the right to expect that data will be accurate, and that privacy of data will be protected as well as the right to access information held by government (Janssen, 2012). Most common law countries such as United States of America, United Kingdom, Australia and New Zealand are more open to the voluntarily dissemination of government information compared to civil law and centralized government such as Denmark, France and Sweden (Lakomaa and Kallberg, 2013).

Another aspect which leads to the complexity of implementing OGD is policy. There are many phases in developing a better policy because there are different definitions of the principles of open data and so many parties are involved. The policy of Open Data should be made clearer in order that it can improve the transparency and image of public administration which can ensure business and economic improvement and strengthen the democratic institution (Theocharis and Tsihrintzis, 2013). It can also foster innovation, creativity, economic growth and strengthening public participation. Open data could spur the growth of the information market because government holds a vast amount of non-sensitive data which could help to increase the economic value of businesses and individuals (Chan, 2013).

Data sharing refers to useful data held by the government to be disseminated and available to the public. Data sharing is important in OGD, when the data should be shared by the government with the public and businesses. However, governments classify some information as "secret" because they would be unable to resolve the problems posed by public access to the information (Davies and Bawa, 2012). When the datasets are released through Open Government portals, public authorities need to know what information they hold, to be able to retrieve the information efficiently and to be accountable for this information; citizens also have the right to expect that the

data will be accurate and that privacy will be protected (Thurston, 2012). Some senior government officers do understand the principles of Open Data especially about data sharing but they are reluctant to co-operate due to the issues of national security, personal privacy and breached confidentiality (Peled, 2011).

In order to make the implementation of OGD more successful, standard formats of systems or applications in OGD can help ensure that the processes of open data are performed within set guidelines as agreed by all parties. Thus, the data can be published by using an *Application Programming Interface* (API) in which specific portions of the data can be selected by the programmers and connected to a database and be updated in real-time. This is to ensure that the information available through an API is up to date (OKF, 2012). OGD is data that is held or controlled by government bodies in an open, non-proprietary and machine-readable format (OGD, 2013) that can be used freely, accessible online, published without technical restrictions on re-use, provided under a license that allows the data to be re-used without limitation and redistributed by anyone whether for commercial or non-commercial purposes (Janssen, 2012).

Based on the previous analysis, OGD's role in government is the ability to create value for social and economic nature for either the private or the public sector (Jetzek et al, 2012) and also as a catalyst for innovation, openness and transparency by proactively disclosing government-generated information (Thurston, 2012). OGD could strengthen accountability, build trust and improve citizen satisfaction as well as the ability to tap into the collective intelligence of the public (Janssen et al, 2012). In addition, the citizen can interact more effectively and efficiently with the environment and make informed decisions by using information on e.g. hospital safety, school comparisons, or transport applications (Janssen, 2012).

The lack of understanding and awareness of open data policies and strategies can make government agencies and organisations hesitant to open up data actively (Huijboom and Van den Broek, 2011). The promotion of Open Data should be made in order to raise the awareness of the benefits that could derive from opening up existing data and information in a re-usable way (Reggi, 2011) as well as to improve

policy making and to increase government accountability (Davies and Bawa, 2012). Different interpretations of the term and concept of “open government” make some government agencies more focused on service delivery than on accountability, others emphasise improving communities through better services, and some still focus on disclosures, rather than on improved access to already-public data (Yu and Robinson, 2012).

Ultimately, every organisation has its own goal to achieve the result from what it has planned. The implementation of open data could help organisations to increase the capability of transparency, openness and efficiency and in order to organise to achieve their goals, the current changes that are happening around them, especially in technology, should be taken into consideration because technology plays an important role in ensuring the implementation of open data can be carried out successfully. OGD could be a key enabler of improved service delivery, transparency and public engagement which could result in better relations between government and citizens (Ubaldi, 2013).

3.0 METHODOLOGY

Grounded theory technique under the qualitative research method is used for the purpose of this research and ‘the discovery of theory from data’ is the first definition of grounded theory that was developed by Glaser and Strauss (1967). Grounded theory is a research methodology of developing inductive theories that seeks to develop theory that is grounded in data systematically gathered and analyzed (Myers, 1997).

As this study is exploratory research, grounded theory is good for analysing data because it is open, systematic and structured methodology. In this study, grounded theory was used to provide insight into the factors influencing the implementation of OGD in public organisations. It allowed us to establish and identify the themes across the participants’ data, thus emphasizing the important issues and leads us to

manage that. Furthermore, grounded theory allowed us to compare the issues and interrelationships from the discovery with the results of other studies to put our results in perspective and contribute to the research field’s body of knowledge in an appropriate form.

Grounded theory methodology is relevant to Information Systems research because it can help to develop and generate new theories of information systems phenomena without any particular commitment to specific kinds of data, lines of research, or theoretical interests (Urquhart et al, 2010) and this method is also useful in developing context-based, process-oriented descriptions, explanation of the phenomenon (Myers, 1997) and easily supported by acknowledging the nature of the discipline, which predominantly deals with IT in social contexts (Matavire and Brown, 2008). Investigating the use of Computer Aided Software Engineering tools in organisations was the example that grounded theory has been used in the IS field (Orlikowski, 1993), in which, using the technique of theoretical sampling, the two organisations were selected for their similarities as well as for their differences (Glaser and Strauss, 1967).

Hopefully, this paper could add the literature gap by investigating the implementation of open government data in the UK.

3.1 Research Sites

Two local government organisations and one large national organisation in the UK were selected for this study because these organisations have implemented open government data systems. The interviews were conducted in Scotland (May, June and August 2013) and London (August 2013). Altogether, there were five interviews at three organisations as shown in Table 1.

Organisation	Sector	Interviewee Job Titles
Organisation A, Scotland	Local Government	<ul style="list-style-type: none"> • E-Government Manager • Head of Service

Organisation	Sector	Interviewee Job Titles
Organisation B, Scotland	Local Government	<ul style="list-style-type: none"> • Web Manager • Planning, Strategy and Relationship Manager
Organisation C, London	Large National Organisation	<ul style="list-style-type: none"> • Head of Technology Strategy

Table 1. Participating organisation, sectors and interviewee job titles.

The organisations investigated were involved directly with the public, and the organisations are representative to give a clear picture of the implementation of open government data in the UK. With a total population of 5.2 million people in Scotland, organisations A and B are the local government agencies (Anon, 2013) and the large national organisation in London has a total of 12,000 branches across the UK and has a total of 16,000 employees, including part-time staff.

3.2 Data Collection

Data was collected from the local government and large national organisations in the UK through open-ended face-to-face semi-structured interviews. Before the beginning of each interview, an interview guide was introduced to the topic of discussion and a consent form was provided to make the interviewee understand the information regarding this research and the confidentiality conditions. Participants were assured that any data used for publication will be anonymised. A total number of three public organisations in the UK and five participants were interviewed as shown in Table 1. The interviews were conducted in the English language and conducted in their office premises. The interviews lasted between 40 – 115 minutes and all the interview sessions were audio-recorded by using a tape-recorder. The interviews were then carefully transcribed and the audio records were listened to many times and the transcripts inspected for errors to ensure accuracy.

We chose the qualitative method by using semi-structured interviews for this research because this method is very useful to get more rich data from the user's experience

and data can be generated and analysed in different ways. And also this method is good for analysing data in exploratory studies, and complex and unknown issues can be further explored about Open Government Data in the public sector. By using this method, the researcher can be more flexible and open in posing questions to the interviewees. As mentioned by Ritchie and Lewis (2003), this method can encourage the interviewee to talk freely when answering the question and can allow the researcher to be responsive to relevant issues raised spontaneously by the interviewee. The Grounded Theory method is chosen because this theory has been used in the Information Systems community that would allow us to compare the issues and interrelationships as the result will contribute to the research field's body of knowledge (Hansen and Kautz, 2005).

3.3 Data Analysis

As mentioned above the data analysis was carried out using Strauss and Corbin's grounded theory approach which involved using categories, codes and codings. The open coding is used where the texts were examined by making comparisons and asking questions (Gibbs, 2008). There are three types of code to make the analysis and they are descriptive codes (attributing a class of phenomenon to a segment text), interpretive codes (the meaning is attributed with reference to context and other data segments) and pattern codes (inferential and explanatory codes) (Urquhart et al, 2010).

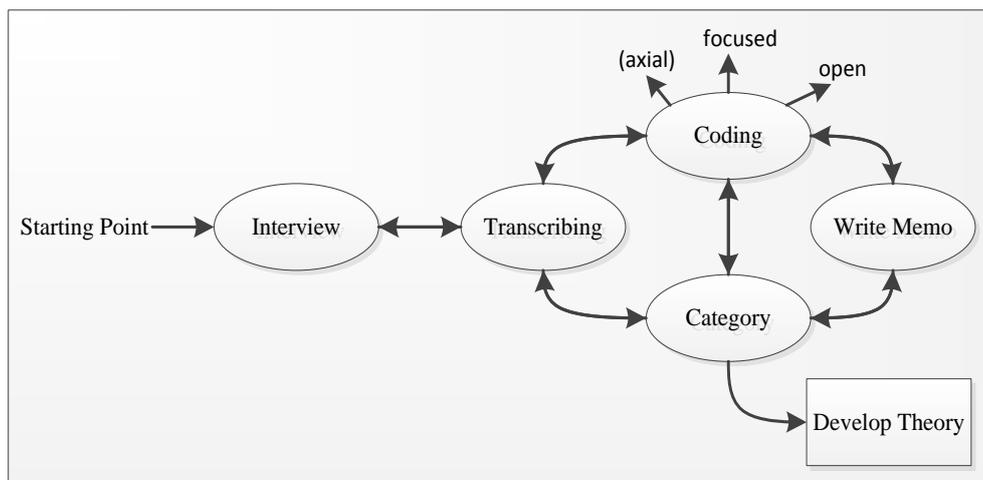


Figure 1. Steps in developing a grounded theory (Hoda et al, 2012; Glaser and Strauss, 1967)

Steps in developing a grounded theory are shown in Figure 1 (Hoda et al, 2012; Glaser and Strauss, 1967), in which the procedure started by finding key phrases or words within the interview, which were coded and compared within and between interviews. In order to refine the coding categories, an iterative data analysis approach was used. Both the audio interviews and the associated written transcripts were initially carefully reviewed.

Strauss and Corbin (1998) explained how the issues can be derived from data that stand for *phenomena*. Then *phenomena* are assigned a conceptual label to become a *code*, also known as a *concept*. Then, the *categories* are identified from some codes or concepts that share the same or similar characteristics which can typically be interlinked and build the basis for a theory.

Adapted from Strauss and Corbin (1998), the process of how to code an interview and develop a theory is described in simplified form in Figure 2. Based on the data, there are many issues that are important to the respondents after coding from the interview transcripts has been done. By using open coding, the data can be read several times and then appropriate labels or ‘codes’ will be marked for different parts of the data so that the common properties will be put under the same concept or phenomenon. Subsequently, the data was processed by breaking it down in to pieces to examine closely, compare for relations, similarities and dissimilarities found in the transcriptions. The codes were grouped together and placed in categories based on their common properties if the codes recurred and there were similarities. Memo will be used if a name with few words is not enough to describe an entire concept.

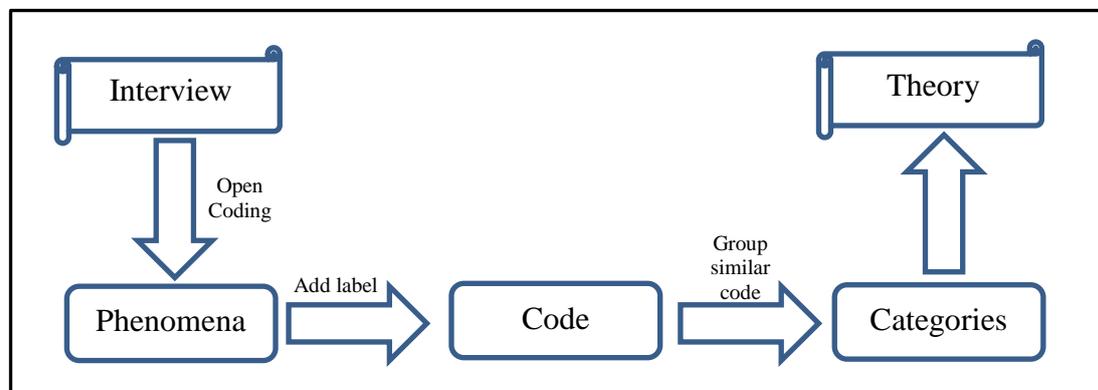


Figure 2: Coding steps in grounded theory (Straus and Corbin, 1998)

4.0 FINDINGS

We present a grounded theory of open government data implementation issues in public organisations in the UK. The findings showed that there are 4 main factors in dealing with implementation of open government data as shown in the data analysis section above and they form a basis for the contributions of this paper.

4.1 Data Sharing

Data sharing is the disclosure of data from one or more organisations to a third party organisation, or the sharing of data between different parts of an organisation. As mentioned by Smith et al. (2008), “*data sharing as the act of enabling a set of consumers to find, access, and use digital data that was originally produced for others*”. Data sharing is important for open government data implementation because it determines that the open government data systems can be implemented more effectively.

Most of the interviewees agreed that data sharing is important for open government data systems because the citizen needs to know what types of data government hold, and the citizen can see more of what public organisations have done for them in order to improve public services as the **E-Government Manager, Organisation A** said “*the technology has enabled us to provide data that was previously hidden and closed within the [Organisation A]*” and supported by **Head of Service** from the same organisation, “*people can start to combine some of the different data sets to discover new stuff, which might be useful for them, but might also be useful for us*” and “*it(sharing information) helps a lot in building credibility for organisations*”. The **Web Manager of Organisation B** also stated that data sharing can help the organisation work together with others as mentioned in the interview “*They [university] use our [Organisation B] dataset for leisure centre, recreation and various other things and they created this interactive cube which is targeting young people to get them more physical education and involved in more activities*”.

As data is open and published on the portal, government, organisations and people are worried that the security and privacy of the data will be harmed as the **Web Manager of Organisation B** said *“the people who are worried about sharing data, worry that people may misinterpret or abuse it”* and *“the problem that you have is the people who own small organisations, who own data are quite defensive about sharing their data; they maintain it may be very important to the service delivery and they won't share it”*. The **Planning, Strategy and Relationship Manager, Organisation B** also added that *“Our data should be open, unless it is someone's personal data that we should protect absolutely”*.

However, policy formulation of sharing the data should be reviewed very carefully as the **Planning, Strategy and Relationship Manager, Organisation B** said *“open data potentially could release a lot of tension within the system”* and the **Head of Service, Organisation A** mentioned *“there's a lot of information sharing in one respect, in that there are requirements that we must tell the [Scottish government] things on a regular basis, under, they're called SPIs, statutory performance indicators”* because the implementation of open government data should cover the legal aspects of public interest and government.

As the **Web Manager of Organisation B** said *“...find new ways of looking at the city and new ways of looking at problems. To find solutions you need partners, people need to be prepared to share data, to see the benefits.”*, there is a potential to make open data be implemented, and it just needs some effort to do that as mentioned by **Head of Technology Strategy, Organisation C** *“interaction with other government services going forward and the pilot is just in early days at the moment, providing access to that identity assurance which you give a digital identity which you can then share with other people”*.

4.2 Standardization in OGD

Standardization is the process to establish specifications and procedures designed to maximize the reliability of open data systems. It is also that the agreement of relevant parties in the open data can be achieved to ensure that all processes with the

performance of open data are performed within set guidelines. The standardization of open data must take account the perspective of data, system, application, government, legislation and public so that the standardization format of the data is known.

Standardization of open data can help the government service to be more efficient and effective because as the **Head of Technology Strategy, Organisation C** said “*it really is advantageous to us to have those open data standards in place*” and “*...a way that is easy transportable into the passport office, asylum seekers, CRB, student loans and various other places by being actually defined in those standard interfaces that can be used easily*”. The statement is also supported by **Head of Service, Organisation A**, “*about open data is that if it’s developed to that standard then it can be shared. So other people can log on and use that system and vice versa, so it’s nice that way*” and **E-Government Manager, Organisation A** also said that “*concentrate on one platform to expose all our [Organisation A] data and therefore people accessing it only need to use one technique to access it*”

Another benefit of making the standardization of open data is as mentioned by **Head of Technology Strategy, Organisation C**, “*...we can interact with so much more that we’ve done before, so much more easily, the cost point is considerably less and once we got open data interfaces, everybody knows that yours interfaces in the same standard way*” and this is also supported by **Planning, Strategy and Relationship Manager, Organisation B** “*...there are things like web search information, those kinds of interfaces which enable people to interface very quickly with multiple systems*”.

However, standardization is becoming an issue because every organisation has its own strategies and policies to achieve its goals as mentioned by **Head of Service, Organisation A**, “*...that’s prohibitive, in some ways, to do this work (standardization) if it involves big development efforts on a small organisation*” and **Planning, Strategy and Relationship Manager, Organisation B** also stated that “*the priority has been led by what, mixed, the balance that the stakeholders want and what the business needs to deliver*” . The different interface, format and application of open data can make the performance of open data up to an expected standard because

as said by the **Planning, Strategy and Relationship Manager, Organisation B**, “*if we [Organisation B] hold other data in another format, it becomes difficult for the person working toward looking at it all*”.

4.3 Lack of Awareness in OGD

Public and government awareness about open government data should be promoted more actively because it can attract citizens’ attention and make them actually want to give the issues some thought and ideas, encouraging them to participate in public engagement with government to formulate better policies that could improve government administration and service delivery.

The lack of awareness in the implementation of OGD by the government would lead citizens to feel not comfortable, lack confidence and not trust that the data presented in the government portal is safe, as mentioned by **E-Government Manager, Organisation A** “*not everyone understands it, particularly within the organisation, some people see it as a challenge, they are uncomfortable*” and **Head of Technology Strategy, Organisation C** said that “*The challenge around internal skills in our organisation needs maturity for recognition of the standard, because again some of these people have been within [Organisation C] for 20 years, they have always done it in a particular way*”. The **Planning, Strategy and Relationship Manager, Organisation B** also mentioned about the exposure of the technology among the citizens which is “*the gap between the people who get it quickly and the majority can be quite wide*”.

Awareness of the citizen in the implementation of OGD has provided opportunities for the citizen to create and design new applications that can help to improve government services as stated by **Head of Service, Organisation A** “*people can start to combine some of the different data sets to discover new stuff, which might be useful for them, but might also be useful for us [Organisation A]*” and also supported by **E-Government Manager, Organisation A** that “*...they [citizen] can see more of what we [Organisation A] do*”. As the **Web Manager of Organisation B** said

“...awareness of open data completely changes in the [Organisation B]” which helps to change the working environment within the organisation.

4.4 Government Responsibility

Government plays an important role in the implementation of OGD by giving support to the organisation, creating opportunities or providing resources that are involved with staff, money, material and services. Government has to be more proactive because the rapid advances in information technology make the public speed up and the government is slowing down.

In order to improve the efficiency and effectiveness of government service, the government should simplify the process of decision making as stated by **Head of Technology Strategy, Organisation C**, *“...a typical public procurement can take anything from 9 to 12 months to complete for a large system”* and by **Head of Service, Organisation A**, *“...make a decision about whether or not to invest and how much time to invest, how much research to do on it, without fully knowing the potential of what it might deliver”*. The **Head of Service, Organisation A** also added *“...a problem around lots of things within local governments, around procurement, it’s around IT, and it’s around all these things”*. As the **Planning, Strategy and Relationship Manager, Organisation B** stressed that *“establishing trust has been very important”* and *“...how we can make a step change in getting more transaction services to deliver online”*

The government agencies should be more proactive as the **Planning, Strategy and Relationship Manager, Organisation B** said *“...we [Organisation B] went out and consulted with lots of different stakeholder groups and based on their feedback, we established this programme of works”* but other agencies and state government do not play the role as **E-Government Manager, Organisation A** mentioned that *“...there isn’t a cohesive approach from the Scottish Government at the moment and other councils”* and that statement is also supported by the **Web Manager of Organisation B** who said *“Scotland is a bit behind whereas you can in England, you have a central*

government and character approach to publish finances and they have to do that, there is no choice”.

Budget is an important element because it can speed up the process of implementation of open data in government agencies but most agencies do not have the funds or allocation to implement the open data in the organisation even if it is beneficial to the organisation as mentioned by **Head of Service, Organisation A** “*no budget to develop this at this point in time*” and it’s been supported by **E-Government Manager from the same organisation** that said “*there is no budget at the moment, we do it along with everything else and that’s likely to be the case other than external funding*” .

Another aspect that should be considered by organisations is the number of staff who handle open government data: from the interviews, 2 interviewees who are dealing directly with OGD said that the number of staff is less than 10; as **E-Government Manager of Organisation A** said “*Apart from me there are 4 people, but not engaged all the time*” and **Web Manager, Organisation B** said that “*3, and I would say none of us do it full time and all of us are doing it as well as other work*”.

5.0 DISCUSSION

We now present a discussion of our findings in relation to data sharing, standardization, lack of awareness and government responsibility as shown in the findings section above.

First we consider data sharing, the disclosure of data from one or more organisations to a third party. Organisations are not willing to share data because they are concerned about quality control or how the data might be used (Both, 2012), accuracy and integrity of the data (Thurston, 2012). However, our findings show that data sharing is difficult to implement because of a lack of trust. There is a lack of trust in the systems and policies that have been made to ensure the security and confidentiality issues are taken into account. Our findings show that the issues of quality control, accuracy and

integrity of the data are also concerns which are in agreement with previous works. However, the contribution of this research is to show that there is a lack of trust in the security and confidentiality of the data.

The second issue is about standardization. Data formats, system and application should be standardized by all parties so that the data and systems have the ability to interoperate with different datasets. Standardization is relevant, easy to access, usable and re-usable by all (Ubaldi, 2013). Government does use linked data standards because it can publish its data responsibly and for data consumers, linked data standards mean they can re-use government data flexibly and easily, for example through APIs (Sheridan and Tennison, 2010). A common standard for the published data is proposed in order to enable interested parties to carry out a consistent analysis across the European Union (Reggi, 2011). We agreed with the previous studies that standardization is good because it can make integration and interoperate with different systems or dataset more easily. However, our findings show that the organisations have selected their own data, formats and standards because every organisation has its own strategies and policies in term of using data standard and format. Thus, as the contribution, standardization is different depending on the type of data available, service provided and demands of the customers or within the organisation.

The next issue is lack of awareness. Lack of awareness occurred among public and government officers in the implementation of OGD due to lack of promotion done by the government authorities. The lack of awareness of OGD implementation can make government agencies and organisations hesitant to open up data actively (Huijboom and Van den Broek, 2011). The promotion is needed to national and local authorities of the culture of transparency and the raising of awareness of the OGD benefits (Reggi, 2011). From previous studies, we can agree that there is a lack of awareness in OGD by government organisations but what we found in our findings is the need for promotion to create awareness to the public and government officers because they do not understand and there is a gap between the people who are aware and those who are not aware of OGD. The findings that contribute to this research are that public and government officers even within the organisations do not really understand the concept and benefits of OGD, all of which will be an obstacle to implementation.

The last issue that we present in this research is government responsibility. Government is responsible to provide the facilities, resources and giving support to public organisations to implement the OGD. Several studies and surveys have shown government responsibilities as a challenge that is keeping public organisation to implement the OGD. According to McDermott (2010), government should hire professionals from various disciplines such as policy, legal, finance and technology operations to work together to define, formulate and develop open government solution. This integration will facilitate the organisation to be more effective and efficient. Government organisations need to acquire new skills, train employees, purchase technologies and upgrade network infrastructure (Lee and Kwak, 2011). These previous works are contrary to our findings that show training of staff, lack of resources and presumably lack of staffs are the factors that inhibit the implementation of OGD. Therefore, contributions for this research show that government should provide specific training for staff, increase the number of staff and specific provision for OGD.

6.0 CONCLUSIONS AND FUTURE WORK

Open Government Data is a new approach by government to improving the quality of public services that are yet to be fully explored. This research is focusing on the implementation of open data systems in the UK that use open data to strengthen law enforcement, transparency and civil society. As we did find the direct impact of OGD for the government, any generalised conclusion will be early at this stage. Moreover, there are potential opportunities in OGD implementation which can reduce operating costs of the government, creation of new businesses, innovation, economic growth, openness and transparency. This will in turn impact on the planning of the implementation of OGD as a main ICT strategic plan for government administration.

The research has been done in the UK with 5 interviews for the study, 4 of which are from local government departments in Scotland and 1 from a large national organisation in London. The interviews were conducted in May, June and August

2013 for local governments and August 2013 for the large national organisation. Grounded theory approach has been chosen for this research and the semi-structured interview method is used because this approach can help to get more rich data from the user's experience.

Data sharing becomes an issue because the organisations are not willing to share the data whether between or within the organisation. Our findings agreed with previous work that says the organisation concerns about the quality control, accuracy and integrity of the data. As for this research, lack of trust in the system and policies that lead to the issues of security and confidentiality of data are obstacles to implementing data sharing in OGD. Standardization is one of the issues pointed out in our research because it can make the systems or application to communicate or integrate very well. But in our findings, every organisation has its own planning and strategies in achieving its goals for the type of data available, services provided and demand of the customers.

Public and government awareness about OGD has proved that this issue plays an important role in determining OGD implementation in public organisations because the public and government officers need to be aware of the benefits of OGD to them in order to enhance public service delivery and engage the participation of the public in government administration. Therefore, government needs to boost the promotion of OGD activities to the public and government officers in order to create awareness of OGD. As a responsibility, government should take action to improve the quality of government information by increasing the ICT infrastructure and provide enough resources. For that reason, government should provide specific training for staff, the number of employees to handle OGD and provision for OGD.

As further work, we propose to obtain more participation, responses and data from public organisations, especially from large organisations, to explore how the organisational and technological factors will influence the implementation and adoption of OGD that will impact on the public service delivery to citizens.

7.0 ACKNOWLEDGEMENT

We are very grateful to all the organisations and interviewees who were generous enough to contribute their experience, time and resources to participate in this research.

8.0 REFERENCES

- Anon (2013). *About Scotland*. [Online]. Available from: <http://www.scotland.org/about-scotland/the-scottish-people/population-of-scotland> [Assessed: 26 September 2013]
- Both, W. (2012). *Open Data-what the citizens really want*. The Journal of Community Informatics, 8(2). [Online]. Available from: <http://ci-journal.net/index.php/ciej/article/view/814>. [Assessed: 13 June 2013]
- Corbin, J., and Strauss, A. (Eds.). (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. SAGE Publications.
- Davies, T. G. and Bawa, Z. A. (2012). *The Promises and Perils of Open Government Data (OGD)*. The Journal of Community Informatics, 8(2). [Online]. Available from: <http://ci-journal.net/index.php/ciej/article/view/929>. [Assessed: 13 June 2013]
- Gibbs, G. R. (2008). *Analysing qualitative data*. SAGE Publications.
- Glaser, B and Strauss, A (1967). *The Discovery of Grounded Theory: strategies for qualitative research*. Aldine Transaction.
- Hoda, R., Noble, J., & Marshall, S. (2012). *Developing a grounded theory to explain the practices of self-organizing Agile teams*. Empirical Software Engineering, 17(6), 609-639.
- Huijboom, N., and Van den Broek, T. (2011). *Open data: an international comparison of strategies*. European Journal of ePractice, 12(1), 4-16.
- Janssen, K. (2011). *The influence of the PSI directive on open government data: An overview of recent developments*. Government Information Quarterly, 28(4), 446-456.
- Janssen, K. (2012). *Open Government Data and the Right to Information: Opportunities and Obstacles*. The Journal of Community Informatics, 8(2).

[Online]. Available from: <http://ci-journal.net/index.php/ciej/article/view/952>.
[Assessed: 13 June 2013]

Janssen, M., Charalabidis, Y., and Zuiderwijk, A. (2012). *Benefits, Adoption Barriers and Myths of Open Data and Open Government*. *Information Systems Management*, 29(4), 258-268.

Jetzek, T., Avital, M., and Bjørn-Andersen, N (2012). *The Value of Open Government Data: A Strategic Analysis Framework*. 2012 International Conference on Information Systems. Pre-ICIS Workshop.

Kalampokis, E., Hausenblas, M., & Tarabanis, K. (2011). *Combining social and government open data for participatory decision-making*. In *Electronic participation* (pp. 36-47). Springer Berlin Heidelberg.

Kassen, M. (2013). *A promising phenomenon of open data: A case study of the Chicago open data project*. *Government Information Quarterly*, 30(4), 508-513.

Lakomaa, E., and Kallberg, J. (2013). *Open Data as a Foundation for Innovation-The Enabling Effect of Free Public Sector Information for Entrepreneurs*. *IEEE Access*, Volume 1 (2013), 558-563.

Lee, G., and Kwak, Y. H. (2011). *Open government implementation model: a stage model for achieving increased public engagement*. In *Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times* (pp. 254-261). ACM.

Lindman, J., Rossi, M., and Tuunainen, V. K. (2013). *Open Data Services: Research Agenda*. In *System Sciences (HICSS), 2013 46th Hawaii International Conference on* (pp. 1239-1246). IEEE.

Matavire, R., and Brown, I. (2008). *Investigating the use of grounded theory in information systems research*. In *Proceedings of the 2008 annual research conference of the South African Institute of Computer Scientists and Information Technologists on IT research in developing countries: riding the wave of technology* (pp. 139-147). ACM.

McDermott, P. (2010). *Building open government*. *Government Information Quarterly*, 27(4), 401-413.

Noveck, B.S. (2009). *Wiki government: How technology can make government better, democracy stronger, and citizens more powerful*. Brookings Institution Press, Washington, D.C.

Open Government Data (OGD) (2013). *Open Government Data*. [Online]. Available from: <http://opengovernmentdata.org/>. [Assessed: 15 June 2013]

Open Knowledge Foundation (OKF) (2012). *Open Data Handbook Documentation Release 1.0.0*. [Online]. Available from [http:// http://opendatahandbook.org/](http://opendatahandbook.org/). [Assessed: 15 June 2013]

- Orlikowski, W. J. (1993). *CASE tools as organizational change: investigating incremental and radical changes in systems development*. MIS quarterly, 17(3), 309-340.
- Peled, A. (2011). *When transparency and collaboration collide: The USA open data program*. Journal of the American society for information science and technology, 62(11), 2085-2094.
- Ritchie, J., and Lewis, J. (Eds.). (2003). *Qualitative research practice: A guide for social science students and researchers*. SAGE, Newbury Park, London.
- Rojas, L. A. R., Lovelle, J. M. C., Tarazona, G. M., and Bermúdez, C. E. M. (2013). *Open Data as a key factor for developing expert systems: a perspective from Spain*. International Journal of Interactive Multimedia and Artificial Intelligence, 2 (2), 51-55.
- Reggi, L. (2011). *Benchmarking Open Data Availability across Europe: The Case of EU Structural Funds*. European Journal of ePractice, 12, 17-31.
- Sheridan, J., and Tennison, J. (2010). Linking UK Government Data. InLDOW.
- Smith, K., Seligman, L., and Swarup, V. (2008). *Everybody share: The challenge of data-sharing systems*. Computer, 41(9), 54-61.
- Strauss, A., Corbin, J. (1998). *Basics of Qualitative Research: Grounded Theory Procedures and Technique*. 2nd Edition. SAGE, Newbury Park, London.
- Theocharis, S. A., and Tsihrintzis, G. A. (2013). *Open data for e-government the Greek case*. In Information, Intelligence, Systems and Applications (IISA), 2013 Fourth International Conference on (pp. 1-6). IEEE.
- Thurston, A. (2012). *Trustworthy Records and Open Data*. The Journal Of Community Informatics, 8(2). [Online]. Available from: <http://ci-journal.net/index.php/ciej/article/view/951>. [Assessed: 13 June 2013]
- Ubaldi, B (2013). *Open Government Data: Towards Empirical Analysis of Open Government Data Initiatives*. OECD Working Papers on Public Governance, No. 22, OECD Publishing. Available from: <http://dx.doi.org/10.1787/5k46bj4f03s7-en>. [Assessed: 24 September 2013]
- Urquhart, C., Lehmann, H. and Myers, M. D. (2010). *Putting the 'theory' back into grounded theory: guidelines for grounded theory studies in information systems*. Information Systems Journal, 20(4), 357 – 381. doi:10.1111/j.1365-2575.2009.00328.x
- Yu, H., & Robinson, D. (2012). *The New Ambiguity of Open Government*. Princeton CITP/Yale ISP Working Paper. [Online]. Available from: <http://ssrn.com/abstract=2012489>. [Assessed: 11 November 2013]