A Co-Creation Based Model For Engaging Citizen Open Data Use

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Abstract  Open data is a somewhat new phenomenon that is increasingly attracting attention from researchers in the academic and practitioner fields. The transformative potential of open data is being examined from various directions and in an interdisciplinary fashion. While major attention has been paid to technical aspects of open data there remains a paucity of research into usage and theoretical contributions. This study aims to examine the factors that influence citizens use of open data. In so doing, we attempt to address the paucity of theory building around open data. We further highlight the potential role that the prominent factors in co-creation can play in engaging the citizen in open data use.

Keywords: • Open data • Co-Creation • Openness • Participation • Deliberative citizenship •
1 Introduction

Open data is an increasingly topical concept which is rapidly growing in popularity amongst governmental organisations, researchers, the business community and other stakeholders. Open data has been defined as 'a “philosophy” or “strategy” that encourages mostly public organizations to release objective, factual, and nonperson-specific data that are generated or collected through the delivery of public services, to anyone, with a possibility of further operation and integration, without any copyright restrictions' (Hossain et al., 2016). Open data can be viewed as a key signifier of the evolving nature of the relationship between government and the citizen as the use of Information Technologies in government holds the promise of enhanced democracy and increasingly engaged citizen participation.

Led by former US president Barack Obamas announcement in 2009 that his government would embark upon a transparency strategy that would see much greater levels of openness in government, many governments around the world have since followed suit with increased emphasis on open data as a key component (Huijboom and Van den Broek, 2011). The potential benefits accrued are manifold. These have been categorised by Janssen et al. (2012) as firstly, political and social e.g. more transparency, creation of trust in government, more participation and self-empowerment of citizens etc. Secondly, economic, e.g. economic growth, stimulation of innovation, development of new products and services etc. Thirdly, operational and technical, e.g. counteracting cost associated with recollection and unnecessary duplication of data, optimisation of the administration process, improvement of public policies etc.

With the increased availability of Open Data, intense pressure is being brought to bear on different public organisations to release government produced data. There are myriad reasons for this including public spending cost reduction, increased returns on public investment, wealth generation, service delivery and innovation (Janssen et al., 2012, Zuiderwijk et al., 2015). The somewhat romantic view is that this will increase transparency and democratic accountability, create trust in government and self-empower citizens (Janssen et al., 2012). While policy-makers appear to believe that open data will be taken up and used by the public resulting in copious benefits, (Zuiderwijk et al., 2015), this belies the fact that the focus of interest in the literature has been on technical and operationalisation issues and scant attention has been paid to usage, theoretical contributions and the role of the citizen in this process. This research will utilise the theory of value co-creation (Galvagno and Dalli, 2014, Prahalad and Ramaswamy, 2000, Prahalad and Ramaswamy, 2004, Voorberg et al., 2015), and develop a model that explains the factors that influence citizen engagement in the co-creation process. We validate and expand on previous work by Voorberg et al. (2015), to create a theoretical model which we hope to validate through future research.
2 Background & Model Development

In this section, we examine three relevant areas of literature. First, we discuss the previous work on open data, the definition of the concept and its precursors. Next, we discuss the evolving role of the citizen while paying special attention to the move from consultative to a more deliberative citizenship. Finally, we examine the theory of Co-Creation as a useful analytical tool that can be used to foster greater involvement of the citizen in the workings of state.

2.1 Open Data

Bertot et al. (2014) propose a holistic definition of open data which encompasses the theory that ‘certain kinds of data should exist beyond the limits of copyright, patents, censorship, or other parameters often placed around data. Data is disseminated openly so that it is freely available to use, republish, and transform into new products’. The majority of articles, both academic and practitioner focused, have failed to reach consensus or clarity on the exact definition of open data. The defining characteristics of Open Data comprise three essential traits that must feature in order to fulfil the philosophy set out by practitioners and academics. While some researchers have cited additional characteristics such as the necessity for data to be non-privacy restricted and non-confidential, (Janssen et al., 2012), as mentioned above, there is a lack of definitional consensus on these characteristics. To address this shortcoming, a summary of open data definitional characteristics drawn from the literature is illustrated below in Table 1.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Source</th>
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<tr>
<td>Available Without Restrictions on Usage or Distribution</td>
<td>Hossain et al., 2016, Attard et al., 2015, Bertot et al., 2014, Janssen et al., 2012, Shadbolt et al., 2012.</td>
</tr>
<tr>
<td>Published in a Reusable Format</td>
<td>Dawes et al., 2016, Hossain et al., 2016, Weerakkody et al., 2016, Huijboom and Van den Broek, 2011, Peled, 2011.</td>
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In the past, this data was preserved by governments for internal usage until the 1960’s when the freedom of information (FOI) campaign pushed for the public disclosure of government data (Sieber and Johnson, 2015). Currently, the movement for greater openness in government has led to an explosion of interest in the open data arena. A clear example is data.gov, one of the most popular portals for open data sets, lists 44 countrywide open data sites proving that the open data movement has spread internationally (Lourenco, 2015).
2.2 Repositioning The Role Of The Citizen

The movement towards openness in government with open data as a key component has the potential to forever alter the relationship between the state and the citizen. Largely, the participation mechanisms enacted over the last quarter of a century have been consultative in nature resulting in little influence over public policy (McLaverty, 2011). These have taken the form of citizens’ assemblies, referendums, citizen juries, public meetings and opinion polling (McLaverty, 2011). These have been largely unsatisfactory in most cases and act as ‘a supplement to traditional representative democracy, rather than an alternative to representative democracy’ (McLaverty, 2011, p. 415). In addition, Dryzek (2000, p. 1) has argued that since the 1990’s, democratic theory has taken ‘a strong deliberative turn. Increasingly, democratic legitimacy came to be seen in terms of the ability or opportunity to participate in effective deliberation on the part of those subject to collective decisions’. He further argues that democratisation takes place along three dimensions: franchise, scope and authenticity. He states that ‘authenticity is the degree to which participation and control are substantive as opposed to symbolic’ (Dryzek, 2000, p. 86). This search for “Dryzekian authenticity” has come about as a result of ‘declines in traditional forms of participation associated with representative democracy’ (McLaverty, 2011, p. 415).

2.3 Co-creation

Co-Creation as a concept has evolved continuously since its antecedents appeared in the form of co-production in the 1980’s. In the sphere of public administration, the seminal papers produced, (Brudney and England, 1983, Parks et al., 1981, Sharp, 1980, Whitaker, 1980), added a solid foundation which was initially built on by Prahalad and Ramaswamy (2000, 2003, 2004).

There has been a great deal of discussion in the academic literature concerning the issue of definitional differences relating to co-production and co-creation (Grönroos and Voima, 2013, Leroy et al., 2013). Voorberg et al. (2015) found that when they compared the record definitions of co-production and co-creation, to a large degree, both terms were defined analogously. In addition, they concluded that co-creation and co-production have been used as interchangeable concepts while questioning the feasibility of conceptual clarity. Given the definitional murkiness of the co-creation concept and its interdisciplinary nature, this research will draw from Galvagno and Dalli (2014, p. 644) more broad definition of co-creation as a ‘joint, collaborative, concurrent, peer-like process of producing new value, both materially and symbolically’.

2.4 Barriers To Open Data Use From The Citizen Perspective

In order to determine whether non-technical barriers exist to open data use, we reviewed the pertinent literature in the field. We found that there is a lack of articles that examine
barriers in a non-technical sense. The relevant articles that address the subject directly are examined below.

Ohemeng and Ofosu-Adarkwa (2015) examined the Ghana Open Data Initiative (GODI) from a demand side perspective which was initiated in 2012 with the primary aims of administrative efficiency and economic development. They described the level of civil society involvement as ‘abysmal’ and one the main non-technical challenges has been the involvement of citizens in the process. This is explained as a consequence of a skills deficit and a lack of awareness (Ohemeng and Ofosu-Adarkwa, 2015). They further point out the necessity of balancing high and low technology approaches such as adopting a mobile government (M-government) path (Ohemeng and Ofosu-Adarkwa, 2015). Shadbolt et al. (2012) analysed the socio-technical aspects of linked open government data from data.gov.uk. They make clear that the makeup of the user interface is a crucial issue by explaining ‘the ease with which ordinary citizens can access and query the data is a crucial factor for open government data’s value’ (Shadbolt et al., 2012). Huijboom and Van den Broek (2011) examined the open data strategies in five countries (Australia, Denmark, Spain, UK, and USA). They found that one of the top barriers of open data policy was the issue of limited user friendliness. They point out that ‘technical experts of several countries stated that the existing databases should be converted into more user-friendly datasets to be of use for citizens and businesses’ (Huijboom and Van den Broek, 2011). This sample of case studies which address the user perspective endorse the idea that there is a dearth of studies investigating usage of open data from the citizen perspective. They further point towards the existence of non-technical and socio-technical barriers.

3 The Research Model

Currently, there is a dearth of literature examining theory contribution and development in the open data field (Magalhaes et al., 2014). Furthermore, as Zuiderwijk et al. (2015) point out, ‘little is known about what predictors affect the acceptance and use of open data’. To address this shortcoming this research paper will attempt to contribute to the advancement of theory by developing a research model that will explain intentionality to use open data. To do so, the authors adapted and extended previous research conducted by Voorberg et al. (2015) in the area of co-creation. Through a review of the pertinent literature, we were able to validate the first three constructs identified by Voorberg et al. (2015). We further validated the risk aversion construct and added trust as a supplementary factor owing to a symbiotic relationship which exists between the two constructs. Finally, we developed the construct of simplicity of task as the academic literature pointed towards its importance and necessity.
### Table 2: Prominent Factors in Citizen Co-Creation

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<th>Construct</th>
<th>Definition</th>
<th>Reference</th>
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<td>Simplicity of Task</td>
<td>The ease in which the objective is completed.</td>
<td>Elina Jaakkola et al., 2015, Zuiderwijk et al., 2015, Kohler et al., 2011, Haichao et al., 2011, Alford, 2002.</td>
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It is our belief that these prominent factors in citizen co-creation represent moderating variables that have the potential to alter the relationship between the citizen and the outcome of open data usage. This is visually represented below in figure 1.

![Figure 1: Research Model](image_url)

4 Conclusion and Future Work

The next step of this ongoing research will be to design and conduct an exploratory cross-sectional pilot survey with current open data users, focusing on the individual as the unit of analysis. To establish the strengths of our survey constructs this will be followed by a series of semi-structured interviews with selected users. It is hoped this will lead to validation of the constructs mentioned previously. Special attention will be paid to theory building and theoretical contribution. Following Doty and Glick (1994, p.233) theory must contain at least three principles to be defined as theory; ‘(a) constructs must be identified, (b) relationships among these constructs must be specified, and (c) these relationships must be falsifiable’.

Opening up governmental data is riven with potential and pitfalls. How this is managed by the state will determine the accrual of potential benefits for the private sector and society as a whole. For understandable reasons, previous and current research has focused on technical and operationalisation issues. However, if tangible benefits are to be realised greater attention needs to be paid to the end user. The authors propose a research model from the perspective of the user by employing the theory of co-creation that will help in developing increased understanding of intentionality to use open data. The contributions of this study are twofold. Firstly, adapting and extending prominent factors in co-creation with a view to applying them to intentionality to use open data. Secondly, the attempt to build theory in the area of open data which has been under investigated thus far.
Acknowledgement

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References


