Chapter 13
Opportunities and Challenges of Policy Informatics:
Tackling Complex Problems Through the Combination of Open Data, Technology and Analytics

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ABSTRACT

Contemporary societies face complex problems that challenge the sustainability of their social and economic systems. Such problems may require joint efforts from the public and private sectors as well as from the society at large in order to find innovative solutions. In addition, the open government movement constitutes a revitalized wave of access to data to promote innovation through transparency, participation and collaboration. This paper argues that currently there is an opportunity to combine emergent information technologies, new analytical methods, and open data in order to develop innovative solutions to some of the pressing problems in modern societies. Therefore, the objective is to propose a conceptual model to better understand policy innovations based on three pillars: data, information technologies, and analytical methods and techniques. The potential benefits generated from the creation of organizations with advanced analytical capabilities within governments, universities, and non-governmental organizations are numerous and the expected positive impacts on society are significant. However, this paper also discusses some important political, organizational, and technical challenges.

INTRODUCTION

Policymakers have always faced complex problems related to economics, public health or education among other policy domains. Because of the complexity of causes, as well as because of the intertwinedness of them in complex networks of –sometimes circular—causes and effects some of these problems have been characterized as "wicked" or "messy" (Eden, Jones, & Sims, 1983). Some other problems have been characterized as "tangled" (Dawes, Cresswell, & Pardo, 2009), when the source of complexity comes mainly from the number of stakeholders that need to agree in the definition of the problem and a way to solve it. The perceived need of using scientific modeling and empirical data to face such problems promoted the development of the area of Policy Modeling in the 70s (Ruiz Estrada & Yap, 2013). This traditional view of policy modeling emphasizes the use of models and empirical research to better understand causes and effects of policy choices, and has been dominated in the last 40 years by an economics orientation (Ruiz Estrada, 2011). New lenses of policy modeling, like what has been called Policy Informatics, have moved from this traditional perspective into a broader understanding of causes and effects of policy problems and the effectiveness of policy choices and instruments for dealing with them (Ackermann, Andersen, Eden, & Richardson, 2011).

Consequently, in the last decade, we have witnessed a renewed interest in policy modeling with a broader approach (Barrett et al., 2011; Dawes, Helbig, & Nampoothiri, 2014; Johnston & Kim, 2011; Sonntagbauer, Nazemi, Sonntagbauer, Prister, & Burkhardt, 2014). As mentioned before, the contemporary view on Policy Modeling has been also called Policy Informatics by academics and researchers in North America. Besides the importance of modeling and empirical data, contemporary policy informatics (or policy modeling) promotes stakeholder involvement as well as interdisciplinary approaches to policy analysis (Ackermann, Andersen, Eden, & Richardson, 2011; Cockerill, Daniel, Malczynski, & Tidwell, 2009; Eden et al., 2009; Klievink & Janssen, 2010). We believe that this new interest in policy modeling and policy informatics has been triggered by the world-wide open government initiatives, which emphasize open government data to promote transparency, innovation and collaboration in the solution of complex social problems in a more participatory way (Bertot, Jaeger, & Grimes, 2010). Moreover, technological developments on social media create opportunities to improve participation in the policy process as a whole (Lampe, LaRose, Steinfield, & DeMaagd, 2011). Therefore, open government and open data are generating an opportunity for new policy modeling efforts and provide the necessary empirical basis for deeper analysis and potentially broader citizen engagement.

The open government movement, started by the United States in 2009 (US Government, 2009), and followed by the European Union in 2010 (European Commission, 2010, p.6), has extended to 65 countries that have signed the Open Government Partnership, has the main goal of harnessing Information Technologies (IT) for easy access to public information, improved transparency, and increased involvement of citizens and businesses in the policy-making process. However, as many other technology-promoted changes, current efforts on open government and open data face obstacles and challenges (Bertot et al., 2010; Dawes, 2010; Dawes & Helbig, 2010). Open government and open data initiatives rely on advanced analytical methods, access to critical data, and more sophisticated IT tools and Web 2.0 applications for policy analysis. However, we also argue that the combination of these contemporary components for policy analysis presents challenges in terms of governance and integration in complex social, institutional, and organizational settings (Christensen & Laegreid, 2008; Margetts, 1999). The arrival of new technological advances and large datasets is not always accompanied by trained specialists necessary for these new tools, well-devised and effective governance mechanisms for their people-technology-data

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