

Understanding the Value and Limits of Government Information in Policy Informatics: A Preliminary Exploration

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ABSTRACT

Policy informatics is an emergent area of study that explores how information and communication technology can support policy making and governance. Policy informatics recognizes that more kinds, sources and volumes of information, coupled with evolving analytical and computational tools, present important opportunities to address increasingly complex social, political, and management problems. However, while new types and sources of information hold much promise for policy analysis, the specific characteristics of any particular government information resource strongly influences its fitness and usability for analytical purposes. We therefore contend that information itself should be a critical research topic in policy informatics. This poster presentation shows how different aspects of information conceptualization, management, quality, and use can affect its “fitness” for policy analysis.

Categories and Subject Descriptors

K.4 COMPUTERS AND SOCIETY, K.4.1 Public Policy Issues

General Terms

Theory

Keywords

Policy Informatics, Information Quality, Fitness for Use, Policy Analysis

1. INTRODUCTION

Policy problems, alternatives, and decisions address myriad topics and issues. They can focus on education, public health, transportation, urban design, taxation, child welfare, economic development and many other areas. Each policy focus has its own substantive considerations, expertise, and conflicts. But all instances of policy analysis have one common element — they need, use, and generate information. Information is often treated as a black box when studying policy analysis. Stakeholders,

analytical techniques, and technology tools all receive considerable attention. But information is generally treated as a given, used uncritically, and trusted without examination. This can be a problem even when that information is well defined and carefully managed. The problem is greatly magnified for the less structured information sources that are emerging from the recent open data movement and the advent of social media.

Policy informatics is an emergent area of study that explores how information and technology can support policy making and governance. While the conceptual boundaries of policy informatics are not well defined, scholars from different disciplines are working on these issues from a variety of perspectives [6]. For example, the special issue on policy informatics of *The Public Sector Innovation Journal* includes research topics such as how ICTs influence governance and citizen participation and how ICTs enhance policy analysis and policy modeling. The most recent research conference of the Association of Policy Analysis and Management (APPAM) saw the emergence of a sub-community of scholars who are interested in going beyond traditional econometric-based approaches to policy analysis to include new tools such as agent-based modeling, simulation, and system dynamics as well as data visualization, network analysis, data mining and other tools that are better suited to displaying and understanding complexity.

A basic assumption in policy informatics is that more intensive and creative use of information and technology can improve policy-making processes and lead to better policy choices. Most attention so far has been focused on the technical tools. However, information itself should be treated critically in policy informatics. This poster presentation is a preliminary exploration of how to conceptualize the nature, limitations, and role of government information resources in policy informatics research. It explores ways to problematize and evaluate information for policy analysis and illustrates the issues and the potential benefits with selected cases.

2. DIFFERENT CONCEPTUALIZATIONS OF POLICY-RELEVANT INFORMATION

Public policy studies conceptualize policy process in two ways: the rational (or market) model and the mutual adjustment (or polis) model [10]. The rational model assumes that policy is made in an ordered sequence: 1) Identify an objective; 2) Identify alternative courses of action for achieving the objective; 3) Predict the possible consequences of each alternative; 4) Evaluate

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the possible consequences of each alternative; 5) Select the alternative that maximizes the attainment of objectives [10, p. 8]

While the rational model presupposes a unified goal as the starting point of the policy process, the mutual adjustment model recognizes that the actors involved in the process can have conflicting goals. Actors in the policy process continuously bargain and negotiate their goals, ideas, and frames; they build and maintain coalitions to gather support for their ideas and suppress opponents' ideas, although mutual agreement can be reached as a result of interactive processes among the actors [8], [10].

The differences in the two models lead to different conceptualizations of information. The rational model treats information as objective and factual, to be selected according to the alternatives identified, evaluated, and chosen. The mutual adjustment model emphasizes actors' interpretation of information, that is, how actors make sense of information. Actors have different interpretations of information and focus on different aspects of information, depending on their goals, ideas, and frames of reference. In this view, ambiguity is common, caused not by lack of information but by the fact that information users make sense of information in different ways based on their own values.

3. INFORMATION QUALITY AND FITNESS FOR USE

Even when information is treated as objective fact, as in the rational model of policy making, information problems cannot be avoided. Information quality is a fundamental consideration. The most common understanding of information quality is factual accuracy. However, research studies identify multiple aspects of information quality that go well beyond simple accuracy. Intrinsic information quality also involves believability, objectivity, and the reputation of the sources. Moreover, even information that is of high intrinsic quality still needs to be appropriate in the context of use and therefore to be relevant, timely, concise, and complete enough for the work at hand [7]. Information further needs to be task-appropriate in terms of interpretability, accessibility, and security [11]. An additional set of issues is associated with information that is meant to be published but that does not validly or accurately measure the things it purports to represent. Performance reports such as "report cards" and "benchmarks" are criticized for this weakness because they reduce complex phenomena to simple numbers or letter grades that ignore scale, scope, and context, and can mask other data quality problems [1]. All of these considerations need to go into a judgment about the extent to which information is "fit for use" [9], [11].

4. NEW INFORMATION SOURCES AND NEW CHALLENGES TO FITNESS FOR USE

Certain sources of government information are commonly used in traditional policy analysis. These sources include the US Census Bureau, the Bureau of Labor Statistics, and similar organizations with the professional skill and formal responsibility to collect, manage, maintain and disseminate data for public use. However, the open government movement has recently made tens of thousands of so-called "administrative" data sets available to the public through programs like data.gov whose purpose is to make

federal government data of all kinds from all agencies available for external use. At the same time, entirely new sources of information are burgeoning in the form of social media where information, opinion, public sentiment, and data about networks of influence and relationships are all growing rapidly from local to global scale.

These data sources are very diverse and potentially very valuable both individually and when compared and combined with other sources both internal and external to government. However, because such information was not collected with public release in mind, it is not managed in a structured way (or not managed at all), making it more difficult for others to use and interpret and more subject to misunderstanding and misuse [3].

5. INFORMATION IN CONTEXT

Finally, the organizational and institutional contexts of information collection, management, and use all affect its value for policy analysis. For instance, land parcel information is collected for the purpose of real property tax assessment, but it is also used by other individuals and organizations when buying and selling all kinds of real property, for transportation planning, economic development, emergency services and other uses [4]. However, these different uses often demand different levels of detail, timeliness, accuracy, and specificity that are unimportant or irrelevant in the institutional context of tax assessment. In the case of human services [2], data collection processes for service recipients may be fraught with anxiety or other emotional factors, such that the information is incomplete, inaccurate or both. Data that come from standard reporting processes may be more a reflection of what the pre-defined reporting system "wants" than of the actual phenomenon it is supposed to represent [5]. Even if these information sources are well-managed, they carry the limitations of their respective institutional and organizational contexts.

6. RELEVANCE FOR E-GOVERNMENT RESEARCH

This poster presents policy informatics as an area of study that explores how government information resources and ICTs can support policy analysis, public management, and governance which are all core concerns of e-government research. We will summarize policy informatics and the foregoing government information challenges and illustrate our points through several case examples:

- Deriving multiple forms of public value from land records
- Evaluating services for homeless people
- Tracking the results of spending under the American Reinvestment and Recovery Act

For each case we will show how the information artifact is subject to different influences that affect its quality and fitness for use in policy analysis.

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