

E-Democracy and Certified Scientific Knowledge in Brazil: Applied Scientometrics to Assess Health Policy Debate

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Abstract

Innovations such as online public consultations denote a promising advance, but with results which have not been properly studied up to this moment in Brazil. One of the goals of this research in progress is to assess the usage of certified scientific knowledge to sustain perspectives both from the Brazilian government, in the documents on health policies subjected to consultation from 2003 to 2008, and from the comments posted by contributors, with a Bibliometrics / Scientometrics study to verify ranking, frequency and distribution of sources and show areas of greater interest to government branches, individuals, institutions and social groups. The analysis has counted so far 278 citations of scientific works published from 1948 to 2008; 60% (167) of them referred to works published in the last 9 years (2000-2008). The citation of fresh scientific achievements seemed to be preferred as a way of giving credibility to an argument in online debates created by tools of digital democracy. Books, book chapters and journal articles represent 67% (186) of the sample, which indicates that the usual means of academic scientific communication were preferred, rather than official sources. English was the language of the majority of the cited journal articles.

Introduction

The tools of democratic participation provided by the new information and communication technologies bring the possibility of enabling wider deliberation on public policy making (Coleman, 2004; Wright & Street, 2007). Innovations such as online public consultations denote a promising advance, but with results which have not been properly studied up to this moment in Brazil. There have been in the country, since 2003, relevant online public consultations, mainly in areas such as public health and environmental conservation, but we argue that so far the extent of participation may have been narrowed by poor or inadequate information and limited debate.

Assuming that academic sources can bring credibility to advance a particular point of view and facilitate the understanding of complex matters, we propose an original research design based on applied Scientometrics to assess the usage of certified scientific knowledge to sustain arguments both from government branches and contributors to consultations.

This research in progress has as its goals, in an interdisciplinary approach:

G1) Evaluating the scope of the online environment and structure provided by the Brazilian government to empower deliberation on public policies, considering focus, extent and political implications of online public consultations on public health and environmental conservation from 2003 to date; methodologically, this goal implies an analysis of the frames imposed by government branches to political agenda setting.

G2) Assessing the quality of information, considering plurality and integrity of data and interpretations, provided by the Brazilian government to give support to the deliberation in online public consultations on public health and environmental conservation from 2003 to date; methodologically, this goal demands content and frame analysis.

G3) Appraising the usage of certified scientific knowledge to sustain perspectives both from the Brazilian government, in the documents subjected to consultation, and from the comments posted by contributors; methodologically, this goal implies a Bibliometrics / Scientometrics study to verify ranking, frequency and distribution of sources and show areas of greater interest to government branches, individuals, institutions and social groups.

These goals are sustained by three respective hypothesis:

H1) The frames built by the government branch responsible for the online consultation limit the extent of the democratic participation, confining the debate within the borders of manageable implications by the government itself, without sharing effective power of formulation of public policies; or, as an opposite possibility, a policy frame admits challenges proposed by contributors which might question and spark changes to the very agenda setting process of policies.

H2) Pieces of information and knowledge provided to guide the contributions to an online consultation are consistent with high cognitive demands and comprise diverse and relevant dimensions of the subject in examination; or, as an opposite possibility, information and knowledge are insufficient to sustain democratic participation, because they have not touched vital aspects of the discussion.

H3) The usage of certified scientific knowledge may give credibility to related arguments and increase the comprehension of the subject in consultation, as it offers credible evidence and sound connections between causes and consequences; or, as an opposite possibility, it clouds the debate as it is given as esoteric and unintelligible reference.

Methods

Content analysis remains useful to identify public and private concerns about political issues (Weare & Lin, 2000). Framing analysis perceives patterns of interpretation which are socially assembled and encourage an individual or a social group to make sense of daily facts (Goffman, 1986). Frames are characterized by the presence of some kind of knowledge (from common sense or political views to scientific evidence) linking causes and consequences in a distinct direction, and by the absence of knowledge which might give some other directions to bond causes and consequences.

The deployment of Scientometrics methods deserves more careful justification, as follows.

A crucial focus of the investigation is an ongoing analysis of the usage of certified scientific knowledge by some online public consultations in Brazil. Claims supported by scientific evidence usually make stronger points, and therefore the government itself and many contributors will attempt to attach their beliefs to science as much as they can. Certified scientific knowledge is, as Nowotny (2000, p. 7) reminds us, “simultaneously used as the hallmark of science-based reasoning, for rubber-stamped recommendations of 'science says, it is good — or bad — for you' issued to consumers and citizens, and as a highly prized political resource for legitimating contrary views”.

The context of a citation must be studied. Is a citation presented without further explanations and substantive arguments or is it featured with clarification of scientific standards and expertise? Scientometrics methods (as a quantitative measure), combined with framing analysis (qualitative approach), are expected to allow us to understand if the credibility usually assigned to scientific authority might be an incentive to achieve greater comprehension of the several aspects of public health policies subjected to consultation.

Such research design departs from the usual applications of Scientometrics and adds new purposes to the field, while still stays in its domains, as these were described by Leydesdorff (2001, p. 5): “[t]he systematic processing of information in order to reduce uncertainty about the environment is the core process in scientific developments that the scientometrician attempts to map”. That is, as long as the scientific achievements are truly embedded in the

public health policies, for the reason they sustain consensus about governmental action, the use of applied Scientometrics methods, along with qualitative approaches, should be relevant to science studies and their commitment to the advance of democracy.

Besides, citations studies on documents prepared to guide democratic participation in online public consultations can help to indicate which fundamentals of a particular science field have been quoted as a reference, and how a field is evolving in relation to public policies which might benefit from the knowledge it generates (Paul, 2000).

We built on citation studies in order to define an adequate scale to estimate the reason why a scientific work was cited in a consultation document or in a draft policy document (AHMED et al., 2004; BRAMBILLA, VANZ & STUMPF, 2006). Although these works have established interesting headings of classification to determine the most relevant reasons to cite a paper, we came to the conclusion that we should find more suitable labels to our own case. We designed three categories: a) sustain an argument: a citation is made in such a way that the original content is intelligibly presented, usually with direct or indirect quotations, with clear references to the author's thought, and the probable effect of this is that the reader would be well informed and therefore encouraged to participate in the consultation, or would feel that the government is being accountable, by explaining what a new policy means; b) value a point of view: a citation is made solely to give credibility to an argument, in a way that makes no difference to the understanding of the related argument; c) avoid explanations: a citation is made without further explanations needed or quotations, in a way that its presence tends to hinder the comprehension of the related argument. The category "a" would be more adequate to public consultation documents and draft policy documents; such a citation should be an incentive to political participation. The category "b" would have a null effect to the understanding of the related argument, and so it would neither make the participation easier nor make it more difficult. The category "c" could discourage the participation, as long as such a citation would demand a greater effort to grasp the main points of the related thought. In fact, within the category "c" of citation, an author could avoid giving explanations about an argument, by offering a reference to a paper which supposedly holds them. Although this can be considered a regular and justified practice in scientific works, in a public consultation or in a policy document could prevent others from engaging in public policy making.

The current phase of the investigation has been focused on the usage of certified scientific knowledge by eight recent public online consultations organized by the Brazilian Ministry of Health and conducted to gather contributions to the formulation of:

1. National Policy on Men's Health Care (contributions received from September 10th to September 30th 2008);
2. National Health Policy of Lesbian, Gay, Bisexual and Transgendered (June 20th to July 30th 2008);
3. National Policy on Health Technology Management (October 16th to November 16th 2006);
4. Parameters to Medical Record of Elderly People, according to the National Policy on Elderly People (July 12th to August 12th 2005);
5. National Health Policy of Youngsters and Adolescents (June 16th to July 16th 2005);
6. National Policy on Occupational Safety and Health (May 5th to November 30th 2005);
7. National Agenda of Health Research Priorities (March 23th to May 8th 2004);
8. National Policy on Information and Informatics for the Public Health System (November 27th to December 15th 2003).

Additionally, draft versions of three policies were later published by the Brazilian government: 1. National Policies on Health Technology Management; 2. National Agenda of Health Research Priorities; 3. National Policy on Information and Informatics for the Public Health System. Therefore, so far 11 units of analysis have been studied. They were chosen because they are the most representative health policies, in terms of impact on budgetary plans of the Brazilian Health Ministry, conducted from 2003 to date, which used citations. We

did not evaluate consultations on technical protocols. Raw data from citations and reference lists were mined with Vantage Point 5.

Findings and discussion

The analysis counted 278 citations of scientific works and others published from 1948 to 2008. About 46% of them were found in the draft versions of public policies compiled by government branches after consultation; 54% were detected in documents which presented the guidelines subjected by government branches to consultation and the comments posted by contributors. In that sample, 60% (167) of the citations referred to works published in the last 9 years (2000-2008). In the 1990s, there were 29% (81). In the 1980s and 1970 (and before) the numbers were 6% (17) and 5% (13) respectively. Fresh scientific achievements seemed to be preferred as a way of giving credibility to an argument in online debates created by tools of digital democracy.

The number of cited authors was 291; 216 were of personal authorship, and the other 75 were of institutions such as Brazilian Institute of Geography and Statistics, Brazilian Ministry of Health, World Health Organization, Pan American Health Organization, Office of Technology Assessment (US), National Health System (United Kingdom), Organization for Economic Co-operation and Development, United Nations Educational, Scientific and Cultural Organization and professional medical associations. This indicates that relevant health institutions have been passed by single authors as a distinguishing resource to support an argument in online public consultations on health policies in Brazil. This is an intriguing finding. We could expect that data produced by official organizations would be a central reference in a policy debate. But other works were preferred, which may suggest that the academic research has been rendering greater impact. In our sample, single authorship was the most frequent citation: 195 out of 278 (70%) had only one author, and 83 (30%) had from 2 to 12 authors. This is another finding for relevance to us. Health research usually demands greater teams and resources, in comparison with social sciences, and often presents, because of its large investment, highly representative results, which are supposedly more trustable. However, government branches and contributors to online public consultations more frequently cited single authors, whose works could be of lesser impact on medical practices.

We identified 10 types of citations in the sample: books (68), journal articles (92), official documents (35), book chapters (26), legislation (32), thesis and dissertations (9), websites (5), white papers (2) and others, such as articles publicized by non-governmental organizations (9). Books, book chapters and journal articles were, therefore, 67% (186) of the sample; all the others were 33% (92). Again, we can see that the usual means of academic scientific communication were preferred, rather than official sources.

Those 92 cited journal articles were published by 45 periodicals, from which only 14 (31,1%) were published in Brazil. The other 31 (68,9%) were published in Europe and Americas (except Brazil). English was the language of 29 (64,5%) periodicals, followed by Portuguese (13 journals, or 29%), Spanish (2, or 4,5%) and German (1, or 2%). So English was the language of the majority of the cited journal articles. It can be said that the knowledge of the language spoken in Brazil has been insufficient to manage relevant concepts used in online public consultations in the country. The ability to understand English seems to remain indispensable to those who wish to sustain their arguments with references to certified scientific knowledge.

We have so far tested only our third hypothesis (H3). We counted 196 citations made by government branches in public consultation documents and draft versions of public policies publicized after consultations. Category “b” of reasons of citation (value a point of view) was detected in 96 (49%) citations, followed by category “c”: avoid explanations (76, or 39%) and category “a”: sustain an argument (24, or 12%). In the comments posted by contributors in

public consultations, which counted 44 citations, we found most of reasons of citation in category “c” (24, or 55%), followed by category “b” (15, or 34%) and category “a” (5, or 11%).

The usage of certified scientific knowledge may give credibility to related arguments and increase the comprehension of the subject in consultation, as it offers credible evidence and sound connections between causes and consequences; or, as an opposite possibility, it clouds the debate as it is given as esoteric and unintelligible reference. We found that government branches make citations mainly to value their arguments, not to explain them, and that contributors to public consultations mainly make citations in such a way that could discourage others from understanding their arguments.

Conclusion

This topic of research proposes a path of investigation which has not been properly explored yet. It analyses data produced by applied Scientometrics in order to explore how certified scientific knowledge was used by online public consultations in Brazil to engage people in public policy making. We can say that government branches and contributors to consultations preferred: a) recently published scientific works, mainly from 2000 to 2008; b) academic sources, instead of official documents; c) periodicals published in Europe and Americas (except Brazil), mainly in English. We can also point out that citations were rarely made both by government branches and contributors to public consultations to increase the understanding of their perspectives; instead, citations were used mainly to give credibility to an argument (in the case of government branches) or to avoid giving further explanations needed to the full apprehension of an argument (in the case of contributors to public consultations).

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References

- AHMED et al. (2004). Highly cited old papers and the reasons why they continue to be cited. Part II. The 1953 Watson and Crick article on the structure of DNA. *Scientometrics*, v. 61 (2) : 147—156.
- BRAMBILLA, S. D. S.; VANZ, S. A. S.; STUMPF, I. R. C. (2006). Mapeamento de um artigo produzido na UFRGS: razões das citações recebidas. *Enc. Bibli: R. Eletr. Bibliotecon. Ci. Inf.*, Florianópolis, n. esp. : 195–208.
- COLEMAN, S. (2004). Connecting parliament to the public via the internet: two case studies of online consultations. *Information, Communication & Society*, 7 (1) : 1–22.
- GOFFMAN, E. (1986). *Frame analysis*. Boston: Northeastern University Press.
- LEYDESDORFF, L. (2001). *The challenge of Scientometrics: the development, measurement, and self-organization of scientific communications*. Boca Raton, FL: Universal-Publishers.
- NOWOTNY, H. (2000). Transgressive competence: the narrative of expertise. *European Journal of Social Theory*, 3 (1) : 5–21.
- PAUL, D. (2000). In citing chaos: a study of the rhetorical use of citations. *Journal of Business and Technical Communication*, 14 (2) : 185–222.
- WEARE, C.; LIN, W. (2000). Content analysis of the World Wide Web: opportunities and challenges. *Social Science Computer Review*, 18 (3) : 272–292.
- WRIGHT, S.; STREET, J. (2007). Democracy, deliberation and design: the case of online discussion forums”. *New Media & Society*, 9 (5) : 849–869.