

# Possibility for the application of publications analysis to evaluation of research institutes

Toshiya Kobayashi and Saburo Ogata

**Abstract**—This study looks at the possibility of using publications analysis, which has been used by companies as a basic survey method for formulating publications strategies, as a quantitative index for evaluating researches conducted by national universities. The study also describes the reality of public outreach toward Japanese society, being carried out by research institutes such as universities, through publications analysis.

**Keywords**—public outreach, publications analysis, science policy evaluations, technology branding, Third Basic Program for Science and Technology.

## 1. Introduction

In August 1997, an “Outline index for evaluation common to all research and development activities in Japan” was formulated with the aim to evaluate R&D based on the First Basic Program for Science and Technology, launched in 1996. Research conducted in universities at national expense have been targeted for evaluation.

How is quantitative analysis conducted on the results of research? Two common methods are to look at the number of papers published and the number of citations in other publications. However, there are few indices on items such as the number of theses written or quoted, for which evaluators and evaluatees can unanimously agree. In this research, we will examine, through empirical research, the potential to expand the use of the quantitative index.

## 2. The position of this research

First, it is important to gain a quantitative grasp of how the media report on research institutes and researchers. Public outreach is used as an index for evaluating how institutes and research activities are publicized. Consequently, gaining a grasp of public outreach can be one method for evaluating research work.

We decided that it would be important to conduct an initial empirical examination to quantitatively and qualitatively grasp how research institutes and researchers in Japan have been portrayed in the media, based on the view that this could lead to the establishment of an index for research institutes and researchers to dispatch information proactively, appropriately and efficiently. To do this, we decided to

use “publications analysis”, which has been used as part of activities to survey a corporate image leading to brand-building [1].

## 3. Degree of public outreach is utilized for evaluation of research institutes

Under the Third Basic Program for Science and Technology approved by the Japanese government on March 28, 2006, public outreach activities are defined as “education activities for the general public carried out by research and development organizations and institutes”, and clearly positioned such activities as a basic responsibility of such organizations and institutions [2]. Therefore, it is projected that the degree of public outreach will become an important indicator for evaluating research institutes and research in the future. In positioning public outreach as such an indicator, first of all, it is important to quantitatively and qualitatively grasp how research institutes and researchers in Japan have been portrayed by the media to date [3].

We note, however, that there is a perception gap between those who dispatch information and those who receive it. The Japanese government’s “White Paper on Science and Technology 2003” found that many scientists obtained information on social needs and trends relating to science from trends in academia and organizations, through their

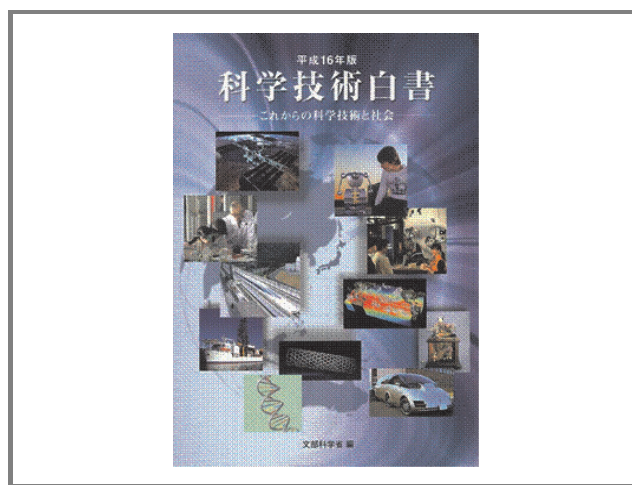


Fig. 1. “White Paper on Science and Technology 2003” by Japanese government.

work and from science magazines, rather than from the media such as newspapers and TV. By contrast, members of the public mainly get information on science and technology and universities through TV and newspapers. In addition, very few scientists said that they wanted to use newspapers and TV as a place to report their research. Consequently, we believe there is a need to conduct publications analysis on the degree of information actually dispatched by researchers through the media (Fig. 1).

#### 4. What is publications analysis?

We would like to briefly discuss the nature of publications analysis. It is a method for analyzing corporate brand image spread through the mass media on a practical level. Basically, it looks at all publications including TV and radio, newspapers and the Internet. The method involves observing the volume and quality of articles carried in newspapers on specific target companies and organizations. What is the significance of using newspapers, as we did in our research, as a target of publications analysis? Newspapers are a source of TV and web news, and the four major national papers cover nearly all of Japan. According to the Japan Newspaper Publishers and Editors Association, 52,568,032 copies of daily papers are published nationwide. This means that 1.04 newspapers are read per household every morning. In addition, since newspapers are read by multiple persons in each household or office, the actual number of readers far exceeds the number of copies sold. According to the Association, 2.8 people read each newspaper in turns. In other words, the number of readers exceeds the entire population of Japan. Therefore, these data indicate that newspapers are the most deep-rooted and trusted media among people in Japan.

#### 5. Evaluating contents of public outreach through publications analysis

Consequently, we decided to base our research on articles in newspapers. We began by collecting news articles using Nikkei News Telecom 21, a large-scale database that permits searches of articles from commercial newspapers, to observe how universities' public outreach activities were reported. The targets for research were seven national universities – Hokkaido, Tohoku, Tokyo, Nagoya, Kyoto, Osaka and Kyushu Universities – whose histories go back further than other national universities. The period of research was 15 years, from 1991 to 2005. The media targeted for the research were four national newspapers – Nikkei (Nihon Keizai Shimbun), Mainichi, Asahi and Yomiuri, including both morning and evening editions. The total number of articles covering universities in general was found to be about 600,000, and among them, we found about 66,000 articles covering the seven universities. From those 66,000, we selected 100 articles for each of

the years 1991, 1996, 2001 and 2005, adding up to four hundred articles, for each university, and used them for the analysis.

Table 1  
Items directly related to university and research are taken to be activities, research, evaluations of activities, and prizes

Quotations	Quotations regarding research carried out by researchers belonging to university
	Quotations or comments by professors belonging to university
	Joint research with external research organization
	As partner or business partner of company
Biography	Affiliation or biography of person in newspaper article
	Biography of participant in roundtable discussion
	Biography (obituary) of deceased person
Activities	Introduction to activities of university
	University program or holding of symposium, etc.
	Introduction to links with external organizations
Research activities	University research activities
Evaluation of activities	Evaluation of university, internal venture, etc.
Personnel	Article on personnel change at university
Receipt of award	Receipt of award
Affiliation	Article on book published by publishing company affiliated with university
Setting	Setting for historical background
	Setting for article

Please look at Table 1 and Fig. 2. You will note that there were many more articles covering Tokyo University than covering the other six universities. You will also note that from 1996 to 2000, the number of articles dealing with Tokyo University and Kyoto University rose. Next, we analyzed the contents of the articles. It would have proven impossible to read all 65,000 articles in

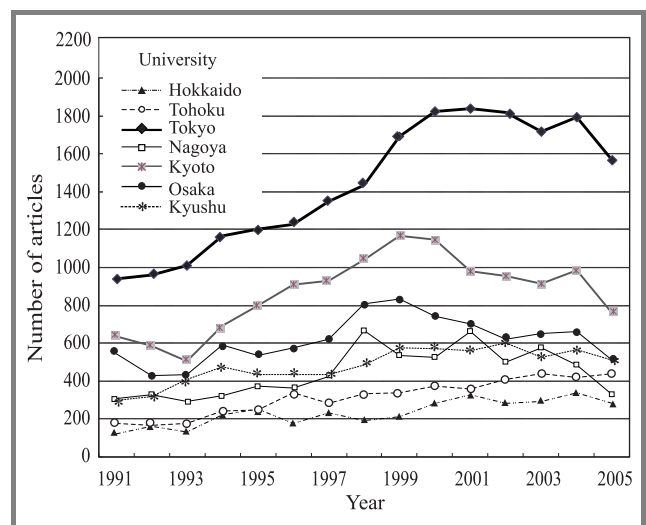


Fig. 2. Changes in number of articles by university and year.

Table 2  
Report number-of-cases transition of the famous national universities in Japan

Year	Name of university							
	Hokkaido	Tohoku	Tokyo	Nagoya	Kyoto	Osaka	Kyushu	Total
1991	122	175	939	310	635	544	298	3,023
1992	164	169	960	330	587	428	316	2,954
1993	131	179	1,008	295	505	436	407	2,961
1994	222	240	1,169	325	693	589	473	3,711
1995	254	246	1,203	376	798	535	432	3,844
1996	179	340	1,228	366	911	574	432	4,030
1997	230	285	1,350	423	930	623	434	4,275
1998	194	331	1,432	669	1,039	806	486	4,957
1999	211	338	1,690	535	1,168	833	577	5,352
2000	281	376	1,824	525	1,148	740	571	5,467
2001	326	360	1,840	663	982	700	560	5,431
2002	284	407	1,819	499	953	619	600	5,181
2003	293	437	1,717	575	915	649	523	5,109
2004	339	421	1,791	486	986	662	564	5,249
2005	285	441	1,564	330	756	509	510	4,395
Total	3,515	4,747	21,534	6,707	13,006	9,247	7,183	65,939

Source: Nikkei News Telecom 21.

Table 3  
Components of negative image

Students	Teachers and university administration				Both students and teachers		
Cheating	Falseness	Go to a hooker	Punitive dismissal	Sexual molester	Distrust	Lynch	WINNY
Use of stand-ins	Bribe-giving	Academic harassment	Fallacy	Misappropriation of money	Retribution	Asault and battery	Information leaks
Declining academic achievement	Embezzlement	Sexual harassment	Plagiarism	Misplay	Listen-in	Awakening drug	Plagiarism
	Concealment	Acceptance of a bribe	Washout	Suspension of employment	Reprimand	Drug	Burglary
	Concoction	Downfall	Medical error	Breach	Judicial action	Hashish	Apprehension
	Plagiarise	Failure	Illegal waste disposal	Apology	Go to court	Violence	Indictment

the database dealing with the seven universities, so we selected 400 news articles for analysis. We found that positive articles could be classified into nine groups listed in Table 2. They dealt mainly with the universities' activities, research, evaluations of activities, and prizes.

## 6. Components of negative image

We also found from the survey that the following negative articles reported on scandals involving them, leading

to the deterioration of the universities' images. There were three main subjects of negative articles: scandals caused by students, scandals caused by teachers and/or university administrations, and scandals caused by both students and teachers. Typical scandals caused by students involved cheating, use of stand-ins for entrance examinations, and other articles related to declining academic achievement. Scandals caused by teachers included academic harassment, forgery and other acts relevant to research. Finally, scandals caused by both of students and teachers were classified as being related to crimes in general. Specific items are shown in Table 3.

## 7. Conclusion

We obtained the following results. First, our publications analysis succeeded in finding clues regarding how universities in Japan have carried out public outreach toward society using the media, including newspapers.

We also found that articles on public outreach included both positive and negative ones about universities. We also found the specific components of this.

We believe, however, that the following concerns can be raised concerning the actual use of public outreach to evaluate research institutes through publications analysis in the future. Research institutes will tend to skip basic research while focusing on research themes that are easily accepted by the media. This, in turn, may lead to a deterioration of basic research in universities in Japan.

Finally, with regard to future tasks related to the creation of a news article classification tool, we must note that it would have been extremely difficult for humans to manually classify the 65,000 articles on the seven national universities obtained in our preliminary survey, so it should be done automatically. Specific keywords could be checked from the headlines and bodies of stories for classification, and a tool for aggregating the classified keywords should be considered.

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