PRESENT SITUATION AND ISSUES OF THE CONSORTIA OF ELECTRONIC JOURNALS IN JAPAN

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ABSTRACT

The establishment of the electronic journal task force of the Japan Association of National University Libraries (JANUL) was dealt with in the paper. There were a lot of issues to be solved when subscribing to electronic journals in the national universities in Japan. The activities of the task force to build the consortia with large publishers were discussed in detail. The task force has now maintained the consortia having more than 12,000 full-text electronic journals with about US$ 100 million in total. Most of the national universities have joined the consortia. The issues remained were also discussed in the paper. In order to maintain the consortia and build new ones the sustainability of the electronic task force of JANUL should be considered. Furthermore, the new method of the scholarly information distribution should be also established in near future.

INTRODUCTION

The university libraries stand at a historical turning point. In an advanced information network society, some features like media uniformity, borderlessness, autonomous network, cost obscurity can be found after the information digitization and "Internet Explosion." In that society, we at the university libraries are required to change in an aspect of library functions and need to develop a hybrid library organically linking traditional and electronic library functions.

On the other hand, dramatic changes of environment around the universities, in accordance with the paradigm shift of social structure, so called the shift from the 20th-century-type to 21st-century-type society, has given way to the social change where a sense of value has moved towards being environment-oriented or human-oriented from "economy-oriented" and led to the needs for the creation of new integrated academic fields, combining humanities and social sciences and natural sciences. However, the administrative and fiscal reforms in Japan extended over to the universities, where 1) staff reduction, 2) library budget cut, 3) pursuit of efficiency, i.e. corporate efforts and library economy, are all required.

In April 2004, the national universities were transformed into independent administrative institutions (National University Corporation) and actually even our university libraries have entered the age of "competition and cooperation."

At this stage, we have faced the crisis of annually-rising prices by average 9 % and inflated number of academic journals. We have fallen into a vicious spiral of declining library budgets and serial price hike, unsubscriptions and more price jump. Meanwhile, as the academic journals started to be provided electronically and even needed more cost, we had to

tackle the problem with the establishment of library consortia. The academic journals electronization being accompanied by serial publishers' overconcentration (oligopoly situation), there is an urgent need or a prime task for our library side to conduct new activities.

Consequently, we at the national university libraries in Japan has successfully established nation-wide large-scale consortia and has enabled our subscriptions to over 12,000 titles of electronic journals with US$ 100 million[1),2)].

The consortia-forming process and problems at issue are indicated below.

BACKGROUND AND PROCESS OF ESTABLISHMENT OF ELECTRONIC JOURNAL TASK FORCE IN THE JAPAN ASSOCIATION OF NATIONAL UNIVERSITY LIBRARIES (JANUL)

Background of EJ Task Force Foundation

The background for launching the Electronic Journal (EJ) Task Force is that EJ has been developed and supplied at an accelerating pace and with its excellent features started to take more significant roles than print version as an academic information infrastructure, so called "characteristic change of journals."

In the meantime, large publishers began to propose to provide all titles on a per-publisher basis instead of individual titles. The proposal was considered to have great potential as a measure of making up for the decrease of net subscribed titles due to the journal price hike. Advancement in use of journals and removal of a hurdle with user boundary were also big appeals that EJ should have as a feature. EJ seemed to have the possibilities of bridging the information devide by getting rid of barriers among individual departments or universities.

The launching of EJ Task Force in JANUL is stated as follows.

In May 2000, directors of 7 national university libraries including me sent a petition concerning Yen price issue and parallel import problem to the Elsevier Science. In July, for the above petition, we received a reply from the Elsevier Science wishing for some discussions.

In September, EJ Task Force was established in JANUL. At first, it was supposed to attain the goal for such a short period by June 2001. But, one-year extension was agreed upon at the general assembly of JANUL in June 2001 and negotiations with the Elsevier Science and other publishers would be continued. The Task Force is still now very active.

The purposes to launch the EJ Task Force are as follows.

1) To flexibly and promptly negotiate with the Elsevier Science, on behalf of JANUL, moving towards the introduction of ScienceDirect (SD) into the national university libraries (including archiving experiment) and the contracts in fiscal 2002 and after based on respective conditions.

2) To check EJ supplied by other publishers, aggregators etc. than the Elsevier Science from the same point of view and to negotiate with them if necessary.

3) To examine immediately-required measures against the change of scholarly information distribution raised by the EJ introduction.

Members of the EJ Task Force consist of directors of 5 national university libraries (chief: Prof. Yoshito Itoh, Director of the Nagoya University Library) and administrative associate directors or division-heads of 7 university libraries, 13 members in total. It was created in an unusual form as an organization in JANUL and aimed at its flexible operation. After that, it experienced member changes every year and has maintained the combination of library directors and staff. In Japan, professors hold the post of library directors and could take a strong and resolute stance against any publishers as authors, reviewers, editors and readers of academic journals.

Activities of EJ Task Force and Consortia

Main activities of EJ Task Force are chronologically shown below.

(1) EJ Task Force trial participants recruitment (September 2000)

45 applicants from 37 university libraries joined the Task Force at the first stage. After that, some members were changed year by year. But main members are continuously active.

(2) Survey of all national university libraries

In September 2000, the first survey was done in national universities. SD-21 contracts survey in 2000 and prospect in 2001, number of subscriptions and purchase amount per title of 1200 journals were done. After that the survey of the subscription of E-journal and print journal in national universities has been performed twice in a year to establish the database. It was very useful to negotiate with publishers.

(3) Negotiations with Elsevier Science

Table 1 Number of Participated Institutions : 2002-2005

Publisher	Collection (Approximate Title Number)	No. of Institution			
		2002	2003	2004	2005
ACM (Association for Computing Machinery)	ACM Digital Library , Online Guide to Computing Literature (270)	–	13	16	17
ACS (American Chemical Society)	(30)	–	–	27	34
APS (American Physical Society)	(8)	–	–	29	30
Blackwell	Synergy (700)	56	56	60	56
CUP (Cambridge University Press)	Cambridge Journals Online (180)	–	–	18	19
EBSCO		–	–	30	32
Elsevier					
Limited Collection		4	2	7	6
Completed Collection (Continued)		62	26	37	38
Completed Collection		–	–	8	4
Subject Collection		–	–	7	5
Freedom Collection	(1,800)	15	36	30	39
Shared Access	(970)	–	44	31	25
Life Science Collection	(390)	12	29	24	15
Web		–	2	–	–
Elsevier計		93	97	94	82
IEEE-CS	CSLSP-e (Journal:23, Proceedings:1,200)	–	17	20	16
	Proceedings only (1,200)	–	2	2	3
Karger	Karger Online (80)	–	7	7	7
LWW (Lippincott Williams & Wilkins)	(100)	–	–	10	11
Nature	Nature,Nature姉妹誌, EMBO	–	–	41	47
OUP (Oxford University Press)		–	–	–	10
ProQuest		–	15	17	18
RSC (Royal Society of Chemistry)		–	–	–	1
Springer	SpringerLink (440)	77	84	71	67
Kluwer	Kluwer Online (640)	–	55	56	51
UNIBio Press	(3)	–	–	13	14
Thomson Scientific	Web of Science	15	20	23	25
Wiley	InterScience (360)	61	67	65	64

The negotiation was first started with Elsevier Science. More than 50 negotiations have been conducted since the establishment in October 2000. In March 2001, we received from Elsevier two proposals of "Price Template for Electronic Journals" and "Proposal on Subconsortia, incl. Life Science Subconsortium." That enabled contract renewals with Elsevier in each university and realized the sustaining of the usage environment for EJ even after the completion of SD-21 Program.

In fiscal 2002, the Task Force tackled various issues raised by the fusion of ScienceDirect and IDEAL and also solved the problem of succession to the acquired environment of usage for EJ, with an eye to archives.

Breakdown of 95 participants by subconsortium are 36 by freedom, 20 by cross access and life science, 9 by life science, 24 by cross access, etc. as of March 31, 2003. The second 3 year contact was completed in July 2004.

(4) Negotiations with other publishers
Negotiation with other publisher such as Blackwell, Springer, Kluwer have been done very actively so far. The consortia with 16 large publishers and several agent including two aggregators have been established. The total number of more than 12,000 E-journal titles with US$ 100 million is now maintained. It may be one of the largest consortia in the world.

The number of participated national universities to the consortium of each publisher from 2002 to 2005 is shown in Table 1. Almost all national university libraries have joined the consortia of JANUL. As the results, the average number of E-journal title subscribed reaches almost 5,000 in 2005 in the national universities. The distribution of the titles among national universities is also shown in Fig.1 chronologically. The chronological change of the average E-journal title in national universities is shown in Fig.2 compared with those in private and public universities.

(5) Publication of Q&A pamphlet
The Q&A pamphlet on the contracts survey in July 2002 and current conditions of negotiation was published and distributed to each university.

(6) Usage statistical data analysis
The working group for usage data analysis was set up in October 2002 and compiled a report and also formulated a guideline for usage data report of supplying publishers.

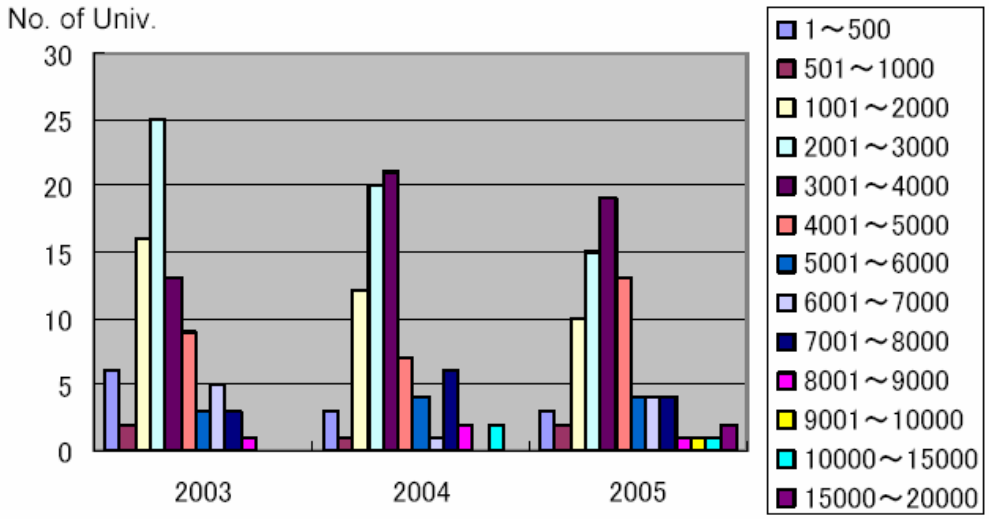

Fig.1 Number of E-Journals in National Universities:2003-2005

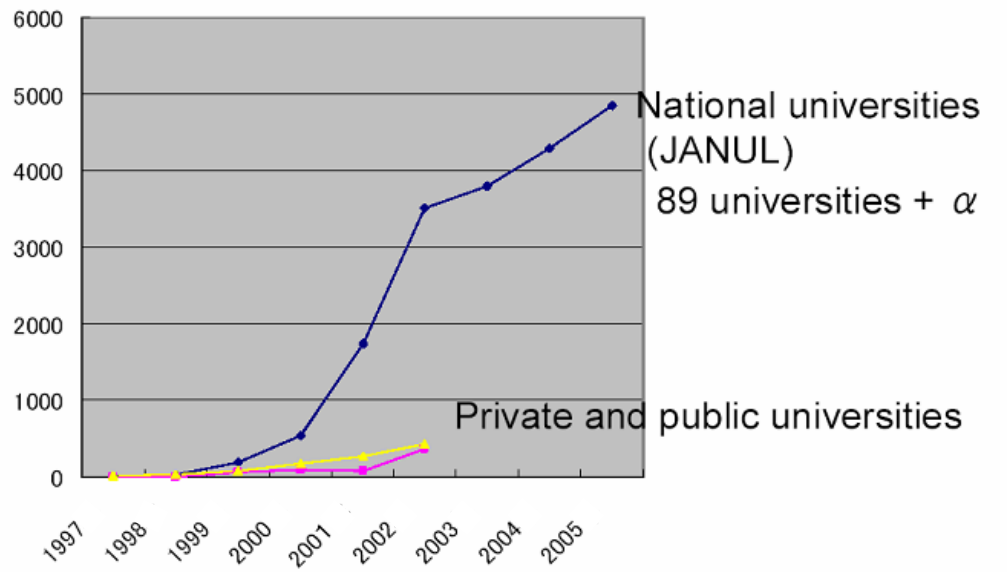

Fig.2 Average Number of E-Journals in Universities in Japan(1997-2005)

(7) Survey on the present and future of usage of electronic journals in the university
In 2001 the first survey was conducted on 3,000 faculty members and graduate students at 10 universities, i.e. 7 large universities, Chiba University, Tokyo Institute of Technology, Hiroshima University. We analyzed its result, compiled a report and distributed to each university in 2002. The second survey was performed in 2003 at the 13 universities including 10 universities of the first survey. The questionnaire was mailed out to 3,750 faculty members and graduate students and the answer of more than 40 % of them were given. The interesting results were obtained to understand of the users' behaviors. The detail of the questionnaire and its results were shown in Appendix.

(8) Basic plan on training workshop of user education staff for electronic journals
In August 2001, the two-day workshops were held both in the east (Chiba University) and west area (Nagoya University). 60 user education staff of national university libraries participated in each workshop. In August 2002, the same two-day workshops were held both at the Tokyo Institute of Technology (east) and Osaka University (west). 56 in the east and 50 in the west participated.

We have had discussions as to how to run the workshop in or after this fiscal year in consideration with the training programs provided by the National Institute of Informatics (NII).

(9) Reaction to the integration of national universities
At the integration of universities, new budget and scale of subscription are not simply equal to the sum of those before. We demanded required considerations and responses from the publishers.

(10) All-inclusive virtual consortium of domestic consortia in Japan
In July 2002, regarding Elsevier's EJ problem, the Japan Fair Trade Commission (JFTC) provided response to the claim for examination of the Japan Association of Private University Libraries, Japan Medical Library Association and Japan Pharmaceutical Library Association that the case did not conflict with the Anti-monopoly Law. With this, legal dispute on Elsevier issue has come to a tentative conclusion.

Our Task Force examined a framework of "JCOLC" in October 2002 and at the Coordinating

Committee of Japanese University Libraries, "JCOLC" was approved as an inclusive generic name of all university consortia only for external use. The private university libraries established consortia named PULC with the financial support from MEXT.

(11) Other points

The Task Force held more than 150 meetings including negotiations or pre-negotiations with publishers during the period of its foundation to the end of June 2005. We kept on sending activity reports with publishers' proposals, meeting minutes, etc. to all national university libraries. Our activity reports have been sent more than 64 times both on the mailing list (ML) of JANUL and EJ staff ML set up in October 2002. And all results of our surveys have been posted on the web in which ID and password required to access.

NEGOTIATING METHODS OF EJ TASK FORCE

Establishment of preconditions for negotiation

The following 3 preconditions were set at the negotiations with large publishers.

1) Confirmation of negotiating partner

We invited executives in charge of EJ, e.g. vice-president of large publishers and confirmed the negotiating ability of Japan branch office and also confirmed the reserving of the right to negotiate directly with the head office.

2) Explanation of Japanese special circumstances (Prepared in Japanese and English)

The Task Force has made efforts to explain about severe situation of the national universities and accounting regulations and to affirm a shared understanding with them. Especially, the great difference between Japanese and Euro-American universities was explained in detail that departments and researchers have been taking a vital role in a decision-making process on serial subscriptions in Japan.

3) Negotiation representing all national universities (99+α as of 2003, 87+α as of 2005)

The Task Force should negotiate representing 99 national universities (currently 87+α) and apply any results into a consortium for all universities.

Check points for consortium contracts

There have not been yet any established baseline agreements or agreement criteria for EJ consortium contracts. We have examined the following items and their contents in various proposals provided by publishers at the meetings.

(1) Effects of making consortium
  * Benefits and favorable terms by the formation of consortium
    discount, range of access, i.e. titles and years of publication
  * Bridging of digital divide in JANUL
    conditional diversity, i.e. considering duplicate subscriptions for large universities and price model for small universities

(2) Price
  * Price model for EJ only, with DDP
  * Not subject to the amount of subscriptions to print version
  * Cap on price hike
  * Cancellation allowed according to the amount of price hike

(3) Evaluation method of scale of subscriptions
  * Amount of subscriptions to print version
    base year, net titles/cumulative titles, catalog price (which currency?)/amount of payment/estimated value of contents
  * FTE
    faculty/graduate/undergraduate, all staff/fields
  * Definition of site

(4) Stable supply of EJ

* Alternative guarantee for service interruption
  refunding, hot stand-by/mirror server
* Accumulation of access coverage in the previous year at the contract renewal
* Archives guarantee at the contract termination
* Method of notification about access failure
* Continuous usage during the contracted period when publishers sold off to another

(5) Services
* Basically 24 hours a day with minimized suspended time for systematic maintenance
* Walk-in user
* ILL
  coverage of titles available (all titles / subscribed titles), delivery method (DDS / FAX / Mail), statistics reportability, use limit (times of supplying one article to one requesting entity [CONTU Guideline]
* Course Pack/Electronic Reserve
* Remote access (UserID&Password/Proxy server)
* Embargo
  beginning time of access to full-text data (at the date when print version is published or earlier)
* Availability of end-user manual in Japanese
* User training
* Supply of metadata
  URL, ISSN, DOI, title, volume issue & years of publication, publishing house

(6) Accounting regulations / Laws
* Contract unit
  consortium by accumulating all individual contracts, whole university / each campus / each department
* Method of payment
  direct contracts (method of remittance), agent contracts (competitiveness in agent selection), due date for payment
* Contract period
  calendar year/fiscal year, segmented period of year, free access after the contract period (gracing)
* Procedures of renewal and its offering time-limit
* Conditions of cancellation
* Designation of domestic laws to comply with, designation of agent and domestic court at a legal dispute

* Method of dealing with undefined matters of agreements or contracts
mutual agreement procedure

(7) Usage statistics
* COUNTER compatible

OUTCOMES OR ACHIEVEMENTS OF EJ TASK FORCE AND THE LATEST REPORT

(1) Outcomes or achievements from the Task Force
The followings have been achieved under the activities of the Task Force.
1) Advantageous contract models for consortium with 16 large publishers and other sectors such as Elsevier, Springer, Blackwell, Wiley and ISI have been established. And those negotiations seemed to deepen our mutual understanding with each publisher.
2) The possibility to set up the EJ archives in Japan was advanced. The collaboration with National Institute of Informatics (NII) is now being realized.
3) The shift from agent contacts to direct contracts was pursued and the beneficial environment for our national universities was created.
4) Activities of university libraries have been reported and appealed to the Ministry of Education, Culture, Sports, Science and Technology (MEXT). With that, introduction budget of EJ has been newly allocated. Requests from university libraries were reflected in the

foundation of Working Group for Digital Research Information Infrastructure and also in its report.
5) With no direct relations to the Task Force activities, the international cooperation with ICOLC, SPARC and ISCA was begun during this period.
These are not fully satisfactory but the outcomes on a nation-wide basis.

The following contributions could be found towards individual activities of university libraries. I suppose that they will mean a great deal more in a consecutive way.
1) The appeal for the importance of EJ was facilitated within the university. Some university libraries were allocated campus budget successfully and others acquired EJ allocations on a whole university basis.
2) Some universities started to develop all-campus framework for promoting academic infrastructure such as duplication control of subscribed journals, in relation with costs.
3) The reforms of library staff consciousness was advanced and it was proved that we might produce a profitable situation by tackling issues for ourselves.

(2) Latest activities of Task Force
1) Negotiations with new publishers
We began negotiations with brand-new publishers, e.g. aggregators or academic societies. More proposals were brought in from negotiating partners.
2) Negotiations with large publishers to continue consortia
The Task Force spent much time on negotiating with the publishers that we have already signed a consortium contract with, concerning new problems like integration of Elsevier Science and Academic Press, etc. The second 3 year contracts between publishers and university libraries was completed in 2004 or 2005 after sever negotiations. As to the extension of the second 3-year contracts, publishers and university libraries would possibly disagree with each other.
4) Maintenance of consortia regarding incorporation, restructuring and integration of national universities
In April 2004, 99 national universities were restructured and integrated into 89. After that, more than 10 universities will be reformed. In 2005 two medium-size universities failed to continue the contract with the same condition and decreased the number of EJ titles subscribed drastically. To recover it is a very important issue.
5) Initiation of archival functions in January 2004
The server workstation for the archival functions of electronic journals started to work from January 2004 at the National Information Institution supported by the government. The new Springer merged Kluwer will install all EJ data onto it. We have to ask other publishers to do the same way.

CHALLENGES FOR EJ TASK FORCE AND PROSPECTS FOR THE CONSORTIA

We have operated voluntarily and intensively for about 5f years and future challenges would be as follows.
1) Can the Task Force afford to operate in or after 2006
To negotiate with publishers and aggregators, a strong negotiating body would be more required as a representative of JANUL. But, we doubt if the negotiations will be successful on the same track. Members who have played vital roles are tired out and will be possibly relocated to other positions. The Task Force, therefore, will need more sustainable organization.

In particular, for consortium contracts and their maintenances a huge amount of administrative and clerical support would be necessary, so the keeping of full-time staff would be essential.

The question is that only JANUL may take a proactive initiative as to a lot of new

publishers and database suppliers to negotiate with. I think that we should intend a tie-up with public and private universities.

2) Reaction to the change of distribution system for scholarly information
Serial price stabilization is an essential problem but still long far away. Most EJ prices are still moving in conjunction with print version. On consortium agreements for EJ, we set a cap on the price hike of almost 5%, but in order to realize the stabilization of EJ price, modalities of distribution for academic information and principle of cost burdens should be reconstructed on top of the consortia.

As academic journals including EJ have been published or distributed internationally in a oligopolistic or overconcentrated market, collaboration with SPARC, ICOLC, etc. might be absolutely necessary. Digitization other than EJ may possibly be making a rapid progress and we should reconsider the distribution scheme for academic information in relation with an appropriate shape of university-launched information transmissions such as the institutional repository with self-archiving and open access system.

3) Strengthened collaboration with each university
In those activities mentioned above of the Task Force, we sent information in a digital format as promptly as possible, After that, we asked about the participation in the consortium, while gathering information and hearing views from each university. Information is a power. The information provided by each university library displayed its greatest force during the negotiations with publishers.

However, in some universities, required information was not effectively communicated to decision-makers, especially for Task Force non-member libraries. In future, we need a new framework for closer communication with the Task Force and quick decision-making within the university libraries. Also, it may be desired that individual libraries should operate in-campus activities to realize a widespread use of EJ and shift of cost burdens in coordination with the Task Force.

The perfect picture of academic information infrastructure is that all researchers should be able to freely and instantly access journal articles and other materials as human intellectual properties over the Internet and realize a cycle of their reproductions.

Because the national site licensing for all EJ's will be unacceptable by any measure from a financial aspect, in the current distribution method of academic information, a wide variety of approaches and consortia will continue to be required. Additionally, the distribution system of academic information should be renovated.

The road ahead will be very bumpy, but it is considered to be our critical task as librarians that we will bridge information gap or digital devide among universities as much as possible and we will create a better environment where research and education may be carried out on an equal footing.

In closing, I would be very grateful to Professor Shun Tutiya (Director of Chiba University Library, Chief of the Task Force from July 2005) and other members of the EJ Task Force. Also I would express my deepest appreciation for their kind cooperation to all national university libraries and the Ministry of Education, Culture, Sports, Science and Technology (MEXT). Finally, I would express my thanks to Mr. Inoue (Tokyo Institute of Technology Library) for his help to make this paper.
This paper is a revised version of my presentation at the IFLA Conference held in Munich in 2003[4].

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APPEXNDIX

Questionnaire to the users and its results

Question: How often have you used "electronic journals" in the past 1-2 years?

Electronic journals have become basic research infrastructure in Natural Sciences. Regular users in Human & Social Sciences have also increased but still considerably low than in Natural Sciences.

		2003	2001	change
Total	almost every day	19.5	12.6	+6.9
	< once a week	51.9	36.5	+15.4
	< once a month	73.2	55.6	+17.6
Natural Sciences	almost every day	24.3	15.7	+8.6
	< once a week	62.3	44.2	+18.1
	< once a month	84.7	66.5	+18.2
Human & Social Sciences	almost every day	3.9	1.4	+2.5
	< once a week	18.0	9.0	+9.0
	< once a month	36.0	16.5	+19.5

Fig. A1 Frequency of Use of Electronic Journals

Question: Approximately how many journals (number of titles) do you use?

The number of titles used on a regular basis has also increased, with the median number growing from "6-9 titles" in 2001 to "10-14 titles" in 2003.

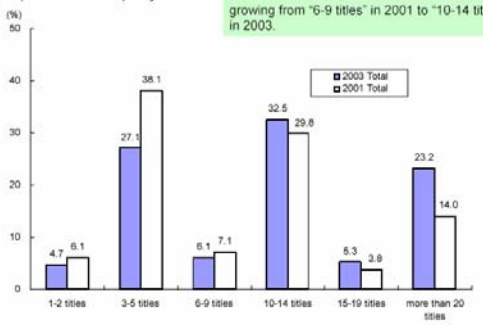

Fig. A2 Number of Titles Used

Question: Where do you normally obtain information on electronic journals?

"Internet" (58.6%) scores highest, followed by "personal communication" (39.2%) and "library notices" (38.5%). Library notices" scores significantly higher for faculty than graduate students, and significantly decreased in 2 years

	2003 Total	2001 Total	2003 N.S. Faculty	2003 N.S. Graduate	2003 H&S.S. Faculty	2003 H&S.S. Graduate
Internet (e.g. web sites)	58.6 #1	53.5	61.6 #1	62.1 #1	44.2 #2	54.4 #1
Other researchers	39.2 #2	35.9	36.6	47.3 #2	36.4	36.3 #2
Library notices	38.5	50.8	41.5 #2	27.3	49.0 #1	33.5
Academic journals	26.3	27.9	33.4	21.9	15.6	11.2
Students	48.4	15.1	12.4	34.2	7.1	30.7
Specialized magazine	18.3	16.2	21.2	15.8	16.9	8.8
Research reports	7.9	7.8	9.1	8.4	5.8	1.9
Publishers	4.9	6.0	6.5	1.5	6.8	0.5

Fig.A3 Information Sources for Electronic Journals

Question: Why haven't you used electronic journals in the past 1-2 years?

Lack of online titles seems to hinder increase in use in Human & Social Sciences.

	2003 Total	2001 Total	2003 N.S. Faculty	2003 N.S. Graduate	2003 H&S.S. Faculty	2003 H&S.S. Graduate
There are not enough titles in my field of study	36.2 #1	30.4 #1	24.1	21.4	49.2 #1	40.5 #1
Difficult to read on a PC screen	31.1 #2	29.9 #2	29.9 #2	26.8 #1	33.2	32.2
Hardcopy documents are good enough	30.4	29.2	35.6 #1	16.1	34.2 #2	24.0
There are no titles I want to use	28.4	28.5	17.2	26.8 #1	33.7	38.0 #2
I don't know how to use them	26.6	25.1	28.7	23.2	24.9	29.8
Not enough back files	12.6	12.0	16.1	14.3	10.4	9.9
Takes too long to download	8.8	14.5	10.3	1.8	11.4	5.8
Interface is difficult to use	6.4	4.7	6.9	10.7	4.7	5.8
Others	9.7	11.5	13.8	14.3	6.2	6.6

Fig.A4 Reasons for Not Using Electronic Journals

Question: Will electronic journals be necessary for your research in the future?

Approximately 70% perceive that electronic journals will be "absolutely necessary" for future research activities.

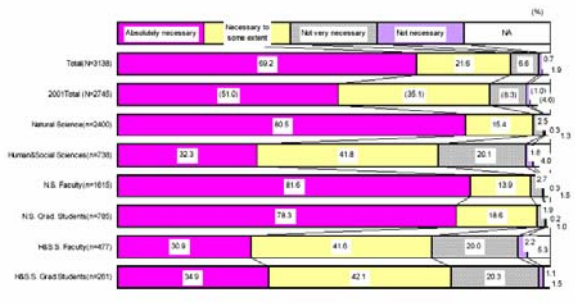

Fig.A5 Future Needs for Electronic Journals

Question: Do you agree with the statement "If sufficient electronic journals become available, there will be less needs for print"?

About half of the respondents still feel that print journals will be necessary along with electronic journals.

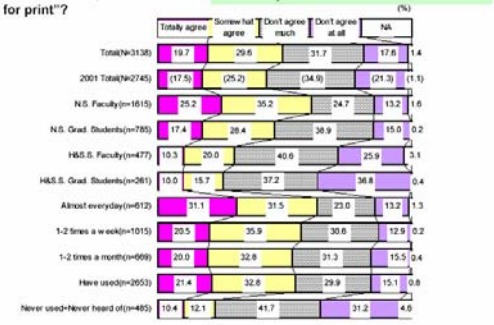

Fig.A6 Needs for Print Journals(1)

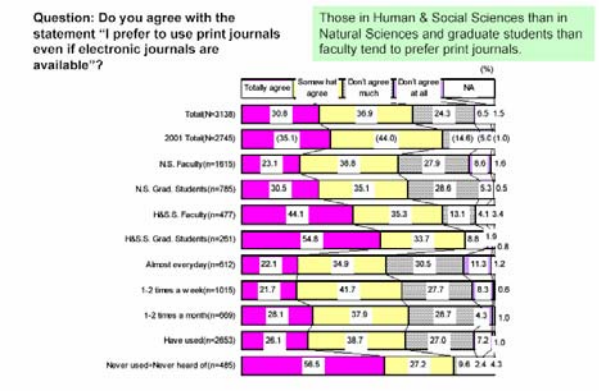

Fig.A7 Needs for Print Journals(2)

Question 1: Which e-journals are you aware of?
Question 2: Which e-journals do you use on a regular basis?

Natural Sciences 2003 n=2400 (2001 n=2146)

	Regularly Used	Awareness
ScienceDirect	53.3 (44.4)	63.9 (55.6)
Nature Publishing Group	26.5	40.4
Springer LINK	19.4 (14.2)	33.9 (25.6)
Wiley Interscience	16.4 (10.4)	28.8 (20.1)
ACS	16.2 (14.6)	22.3 (21.2)
APS	13.7	19.2
AIP	11.2 (11.2)	17.5 (14.0)
IEEE	10.5 (4.1)	21.6 (10.1)
Kluwer Online	8.7 (2.6)	19.6 (7.6)
Synergy	7.3 (4.7)	13.1 (8.7)

Human & Social Sciences 2003 n=738 (2001 n=559)

	Regularly Used	Awareness
JSTOR	15.2 (1.0)	17.7 (8.7)
ScienceDirect	13.8 (8.5)	17.6 (12.0)
OUP	10.7 (4.6)	22.0 (8.7)
Kluwer Online	9.0 (2.1)	16.3 (7.0)
Ingenta (Select)	8.4	11.2 (0.8)
EBSCOhost	7.8	11.5
CUP	6.5 (4.6)	14.3 (9.7)
ProQuest	5.1 (1.8)	9.8 (2.6)
Synergy	4.6 (1.4)	7.8 (3.4)
Wiley Interscience	3.2 (0.9)	7.8 (3.4)

Fig.A8 Use and Awareness of Major Electronic Journals

	Its contents are high quality	Has extensive data	Has a superior search function	Has extensive links	Has an easy-to-view screen design (e.g. fonts, colors)	Easy to open pages on the screen
ScienceDirect	40.2	63.0	24.9	13.7	17.2	9.0
ACS	59.0	53.2	27.0	9.8	21.2	12.2
APS	61.5	48.4	33.6	15.7	12.9	12.2
Springer LINK	40.5	37.6	10.3	5.5	10.0	4.7
Kluwer Online	35.7	25.8	8.8	5.4	7.7	3.9
Wiley Interscience	42.8	30.4	8.4	7.6	12.4	4.7
AIP	57.1	38.0	19.8	11.1	9.8	8.6
Nature Publishing Group	64.7	25.7	9.4	6.6	12.6	5.9

	Quality of images is high	Can be customized for easier use	Highly rated by the academic community	Articles are loaded timely	Easy to use in general	Equipped with alert function
ScienceDirect	9.4	3.2	21.4	19.0	33.2	9.1
ACS	11.8	3.0	42.2	27.7	30.4	5.2
APS	14.1	2.2	53.9	21.0	28.6	0.8
Springer LINK	8.9	2.0	16.8	9.4	25.2	6.0
Kluwer Online	6.2	1.2	18.0	9.1	21.9	5.0
Wiley Interscience	7.8	2.2	24.4	11.8	19.1	2.9
AIP	7.6	1.4	42.1	16.3	18.8	1.0
Nature Publishing Group	11.0	0.0	46.8	21.3	16.6	14.4

* Figures in yellow are the top 3 scores

Fig.A9 Perception of 8 Most Often Used Electronic Journal Services

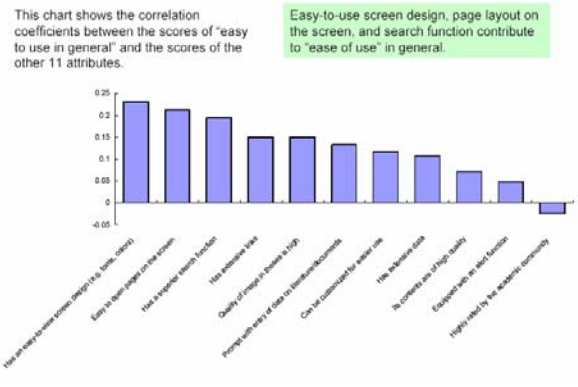

Fig.A10 Features that Contribute to Ease of Use

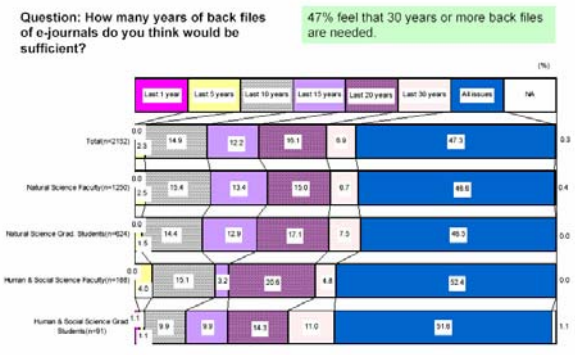

Fig.A11 Needs for Back Files of Electronic Journals

Question: When you read articles of electronic journals, in which data format do you read them most often?

93% use PDF most often. The reason is "prints out neatly" (60%), while the reason in favor of HTML is "takes little time to download".

	HTML	PDF	Postscript	Tex
Total (n=2152)	4.3	92.8	0.9	1.5
Natural Science (n=1874)	3.5	94.0	1.1	1.2
Human & Social Sciences (n=279)	10.2	85.2	0.0	3.7

Question: What are the reasons for often reading articles in the data format you have chosen?

	Prints out neatly	Easy to read on the screen	Has convenient links	Takes little time to download	Has easy-to-use formulas and symbols	The articles I want to read happen to be in this format
Total (n=2152)	56.9	24.4	2.2	18.1	7.2	45.1
HTML (n=93)	9.5	24.0	17.2	40.7	3.1	31.7
PDF (n=1998)	59.7	24.7	1.6	17.0	6.7	45.9
Postscript (n=20)	77.4	22.5	0.0	18.9	9.5	45.3
Tex (n=33)	25.9	18.0	0.0	24.3	50.2	41.2

Fig.A12 Data Format Used

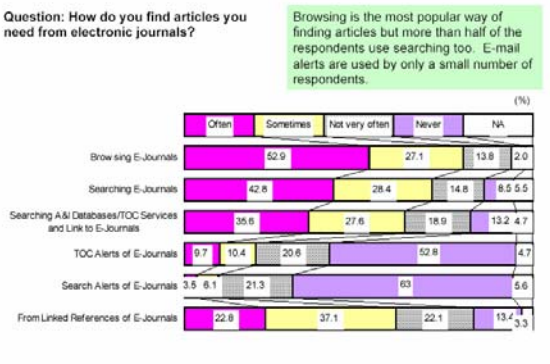

Fig.A13 Paths to Articles Needed

Fig.A14 Needs for Remote Access