

## User Assessment of Computer-Based Bibliographic Retrieval Services\*

JAMES L. CARMON\*\* and MARGARET K. PARK  
Computer Center, University of Georgia, Athens, Georgia 30601

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The academic users of the bibliographic information dissemination center were surveyed to determine the ways in which the search results were being used, the impact which the services had had on professional activities such as research and instruction, the interface between the computer-based retrieval and the traditional form of library resources, and the effect of document overlap between different data bases. The survey results indicate that the dissemination services are being used by a large portion of the faculty and the graduate students within the University System of Georgia, with an average of 3 to 5 people seeing the bibliography from each search question. Over 97% of the respondents indicated some or substantial contribution to their professional activities, with the major contributions being a savings or more efficient use of time and broadened subject coverage. The users indicated several changes in library use habits as a result of the computer-based searches, among them more direct access to the primary literature and increased use of library resources as they had been made aware of new sources and media—e.g., microforms. Percentage responses on these and related topics are presented.

Since the middle of 1968, the University of Georgia Computer Center has been offering computer-based information retrieval services to the faculty, staff, and graduate students on the campus. From a modest beginning of 10 users for one small, specialized data base in 1968, the services have now expanded until some 5400 SDI profiles against 11 data bases and an average of 500 retrospective searches per month on some 16 different data bases are being processed. The gross statistics show 2419 users on the SDI services for a total of 5401 profiles when counted by data base, with service being used not only by the University of Georgia but also the other 26 state-supported schools in the University System of Georgia, as well as other academic institutions, government agencies, and commercial organizations. Approximately 94% of the users are located in the University System.

The justification for the bibliographic search services and the reason for the Center's existence are the support of the instruction and research programs of the University System. Up to now, however, there have been only indirect indications of the extent and manner of use of the services in the academic environment. There has been no formal feedback program at any time during the four years of operation, but the number of users and the number of search profiles has more than doubled each year. The dropout rate has been very low, and, since there are no direct charges levied on the users themselves, the Center has taken the initiative in contacting users annually to determine which of those are still on campus and wish to remain in the program.

To assess the impact of the services on the academic community, the Center recently conducted a survey of the users in the 27 University System of Georgia institutions. A total of 1400 questionnaires were mailed out, with a return rate of 35%. Unfortunately, the time schedule did not allow follow-up with a second wave, which would probably

have increased the return rate somewhat. The survey covered three major areas of interest in estimating the use of the services. The first part of the survey was designed to determine the types of university users, how the search results were being used, and how users became aware of the service. The latter point, it was anticipated, would enable the design of a better educational program to reach new users. The second part of the survey was concerned with library use and how the user obtained copies of articles cited in the search. It was felt that responses to these items could help the Center in cooperating with the library on acquisitions and service-related activities. The third part inquired into the extent of the overlap between the data bases as reflected in the users' search results and the effect this had on the user, a subject which has elicited much discussion among the Information Scientists who operate retrieval systems of this type.

### SURVEY RESULTS

Based on the returned questionnaires, 56.5% of the users are faculty, 34.2% are graduate students, and 9.3% are faculty or staff members who are also taking additional graduate work. The services are not restricted to these categories of the university community, but do tend to concentrate there because of the nature of the available data bases which include the major scientific and technical abstracting or indexing sources, as well as the education files.

The faculty users were asked to estimate the percentage of their time which they spend in Instruction, Research, and Administration. As anticipated, the majority of the users were engaged in both Instruction and Research, with 71.1% of the faculty devoting some portion of their time to Instruction and 85.3% devoting time to research. The number of users directly involved in Administration was somewhat higher than expected with 26.8% of the faculty reporting some administrative activity. Twenty-nine per cent had no instructional responsibilities, 14.7% had no

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\*\*To whom correspondence should be addressed.

research activities, and 73.2% did no administrative work. At the other end of the scale, 4.1% reported 100% of their time spent in Instruction, 15.2% spent in full-time Research, and 3.6% in full-time Administrative work.

The questionnaire asked the user to designate the length of time he had been using the service in terms of three divisions. Just under one-third (29.8%) have entered the user community within the past 6 months, 27.6% during the past 6 to 12 months, and 42.6% have been with the program for over 12 months. The majority of the less than 12 month users were graduate students, which seems to indicate that the faculty community is staying with the services. This correlates quite well with the exponential growth pattern which the center has experienced over the past two years. Over the past year alone, the net growth in the number of users has tripled, a combination of the effects of the addition of new data bases in the areas of geology, engineering, physics, and the government report literature and a concentrated effort to broaden the user community by enrollment of the faculty and students at the other academic institutions in the State.

The Georgia Center has tried various ways of informing potential users about the literature services.<sup>1</sup> Workshops, seminars, and announcements are the principal alerting methods initiated by the Center's staff, and together they account for 36.6% of the user's source of awareness of the service. The miscellaneous category of 12.2% should probably be added in part to the Center's efforts, too, since 40% of the users who checked Miscellaneous specified a member on the Information Center staff or the Computer Center in general as their source. The best single way seems to be by word-of-mouth in that 42.8% of the users learned of the services from their colleagues. This response can be interpreted as a measure of satisfaction with the services since other centers have reported difficulty in eliciting enthusiasm among some of their user groups.<sup>2</sup> Most, if not all, of the 6.2% of users who learned of the service through workshops must be classified as very long term users since the Center has not held a general workshop for users for over two years. However, training workshops have been used for a relatively small number of specialists in the College of Education for instruction in the preparation of ERIC profiles for their departments; these people may be influencing this workshop percentage somewhat.

The Center has made no attempt either to encourage or discourage the use of group profiles, so a question was included in the survey to determine the number of group profiles which are being used and to estimate the number of people, as opposed to users' mailing addresses actually being served. Just over one-third (35.4%) of the profiles are individual profiles. The majority of the profiles (53.4%) serve a relatively small group of 2 to 5 people, while the remaining 11.2% reach over 5 people. Thus, an average of 3 to 5 people in the academic community are being reached with each search profile. Results are shared primarily with professional colleagues (32.7%) and graduate students (44.6%).

Since the Center searches an SDI profile against an average of 1.76 data bases, the staff was interested in the extent of document overlap which the user was seeing and the effect that such overlap had on the user. First, it may be of interest that 47.7% of the users responding to the questionnaire indicated that they search only one data base, which does not agree very well with the file analysis of 20%. This may reflect a poor choice of words in the survey instrument, but more likely it reflects a difference between logical and physical data bases. For example, the ERIC files in education consist of two data bases—*Research in Education* and *Current Index to Journals in Education*—but most users tend to think of them collectively

rather than individually. This is probably true of other discipline-oriented companion files such as *BA-Previews* and *CA-Condensates*, as they are treated in the Georgia Center.

The extent of the overlap observed in the search results, as reported by respondees, is shown in Table I. Approximately 18% of those users who reported that they were searching more than one data base indicated that they never obtained the same citation in one search run that they have seen in a previous search run.

The largest percentage of users reported that they encountered overlap of less than 10% citations previously seen, and 28.2% reported 10–25% overlap. Only 7.1% reported a redundancy of 25% or greater in their search results. The overwhelming majority, 85%, indicated that they simply overlooked the document citation overlap between data bases (Table II), while only a small 1.2% found it irritating.

The Center also was interested in finding out if the user considered the services useful, if they were benefiting him in any way, and if so, in what ways. A large majority reported that there was either some contribution (42.4%) or a substantial contribution (55.2%) to professional activities. The puzzling question is why the 2.4% of users who feel the service has not contributed to their professional activities have continued the service at all. The majority of the users felt that the services had both saved time and had broadened the subject areas routinely monitored (Table III).

The supposed advantage of an SDI service, namely advanced alert notices, comes in at a weak third position. Some of the other contributions cited included locating items that would have been overlooked otherwise, more thorough coverage, coverage of foreign language journals, coverage of an increased number of journals routinely monitored and ability to keep abreast in the field. One user stated that the service led directly to correspondence with workers in his field. Another stressed that the service had contributed to reassessment of his utilization pattern—that the search results had encouraged him to continue in his field. Of course, the service is not free from criticism—one user stated that it was a waste of his time, that

Table I. Extent of Search Results Overlap between Data Bases

	%
None	17.9
Less than 10%	46.8
10–25%	28.2
25–50%	6.7
Over 50%	0.4

Table II. Effects of Search Result Overlap

	%
Overlook/no reaction	85.0
Interesting	9.2
Irritating	1.2
Other	4.6

Table III. Contributions of Service to Academic or Professional Activities

	%
Saved time	78.9
Broadened subject areas monitored	62.7
Gave advanced notice	28.0
Other	7.5

he could get the same number of relevant references quicker using conventional search procedures.

The last part of the survey examined the questions of how the user used his results, the manner in which he obtained the primary document to which he had been alerted, and the effect that the computer-based service had on his library use habits. The majority of the users do try to obtain the articles of interest as quickly as possible, then file the search results for future reference (Table IV).

A significantly large number of the users, 47.2%, indicated that they survey the list of references, then file them for future reference, which suggests on the basis of comments that use is made at some later time for the preparation of papers, presentations, etc. Some of the other uses made of the printouts included making them available to associates, professors, or classes; reviewing them in detail at intervals; and using them as a basis for literature surveys.

A number of informal comments and complaints have been received from a number of the users about the difficulties of obtaining the original document once the citation has been located through the computer based services. Consequently, a question was included in which the user was asked to rank the various sources from which he would normally attempt to obtain the primary document in the order in which he would usually approach them. The results, as tabulated in Table V, indicate that the institutional library is the primary source, followed with about equal ranking by personal subscriptions, departmental libraries, reprint orders, and inter-library loan. On the basis of user feedback, the number of reprint orders would probably go up significantly if more of the data bases included the author's location of work.

The number of requests filled from each of these sources and the time required to fill the orders are both questions which will be investigated more fully in cooperation with the larger institutional libraries in the University System. Those users who use the library to obtain the article were also asked to indicate the approximate percentage of articles read in the library as opposed to those obtained via photocopy from the library. The average percentage of articles read in the library was 49.5% while the average percentage of articles copied was 36.3%. Rankings of the percentages showed no discernible pattern, and the results appear to be very user-specific. This area, too, is one for further investigation, in terms of both library services and copyright implications.

As the last question, the user was asked to indicate

whether or not in his judgement the computer search services had changed his library use patterns, and, if so, how. Over two-thirds of the users (69.3%) indicated a change in their library use. The changes ranged from an increase or decrease in time spent in the library to a shift in the type of materials used or work done there.

Virtually all of the users who mentioned that their time spent at the library had decreased indicated that the decrease was in time previously spent searching and scanning indices and auxiliary sources looking for information. Many of these users stressed that "in-stack" searches and "wading through indexes" generally yield fewer pertinent references than the computer service does. They indicated that they feel more confident of covering the literature with the computer service and appreciate the end of tedious work. Several users also mentioned that they had been able to decrease their time at the library because they could send someone else (e.g., a secretary, a graduate assistant, a work-study student, etc.) to obtain articles they wanted to read.

On the other hand, many users stressed that the service had increased their time spent in the library. One user said he uses the library more frequently because he can now locate more appropriate literature in his field. Others stated that the search had made them aware of additional sources that they had never used before, so they spent more time in the library covering these sources. Still others indicated that the computer service yielded a larger volume of material to be perused, information that they would not have found otherwise. Some users mentioned that they make more frequent trips because they are able to locate articles quicker and with less effort and are less likely to get sidetracked or discouraged. The majority of the users who indicated a change in their library use patterns did not indicate that the type of work they did at the library had changed while their time spent there had stayed the same. Most indicated that they are now able to eliminate the time spent in blind, random, undirected searching, and concentrate on reading and studying pertinent articles.

A number of users also indicated a change in their attitude toward the library, with comments such as "has made going to the library a faster, more enjoyable experience," "time spent there is much more fruitful," "less frustrating," "had been encouraged to continue his research when the service provided pertinent references in his work."

Many users pointed out that the computer service had introduced them to materials that they didn't know existed. These materials ranged from new indexes, special sections, periodicals in other fields of study, additional journals and authors in their own fields, and cross-referencing notations. Some users also mentioned that they had discovered microfilm and microfiche through the service.

Of course, the service was not without its critics. One user provided the following comment: "I use journals and microfilm that I never used before, but reading those printout sheets is sometimes like reading an army instructional manual!" Approximately one-third of the users felt that the service had not eliminated or changed their conventional use of the library very much, but many added that the service was an additional aid to a more extensive search.

## CONCLUSIONS

In summary, the results of the user survey reflect the fact that the Center is reaching a rapidly growing segment of the graduate students and faculty in the University

Table IV. Use Made of the Search Results

	%
Obtain articles of interest quickly	64.9
Survey list then file	47.2
File for future use	11.3
Other	6.9

Table V. Ranking of Document Procurement Sources

Source	Rank						
	1	2	3	4	5	6	7
Personal subscription	97	11	18	16	15	19	18
Department library	40	81	26	7	4	2	10
Colleague subscription	13	48	56	38	19	9	3
Reprint Order	59	73	75	43	32	20	1
Institutional library	235	115	42	14	6	1	1
Interlibrary loan	6	68	78	53	37	16	77
Publisher	1	10	20	33	24	30	31
Other	7	8	6	4	3	1	4

System of Georgia, and the best promotion of the services has been word-of-mouth between colleagues. Overlap between data bases, which has caused considerable discussion in the Information Science group which operates the program, appears to be of little concern to the user. A large majority of users report that they overlook any overlap without reaction, either pro or con. Over 97% of the respondees indicated that the computer-based services had contributed either some or substantially to their professional activities, with the major types of contribution being in the amount of time it has saved in searching the literature (though not necessarily a savings in time spent using library materials) and that it has significantly broadened the subject areas which they can routinely monitor. In response to the question concerning the way in which library use habits have changed, two principal points emerge. For some users the service has been a method of by-passing the library reference works; they use the retrieval results as a request bibliography to obtain the original document by several means, including use of clerical or student help. On the other hand, there is clear indication from the responses that the computer-based services have brought many users back into the library and made them aware of a great many sources of information which were previously unknown to them. The subsequent ease of use of the library was stressed sufficiently often to postulate that it was the reference materials, including such resources as the indices and abstracting journals (and perhaps the card catalogs) which were the bot-

tleneck in efficient and easy use of the library materials. The staff is encouraged that the computer-based services have, indeed, proved a helpful supplement to the traditional institutional library resources, and plan to work much more closely with the libraries in the University System to improve this interface between the two organizations.

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## Comparison of Service Centers and Document Data Bases—A User's View\*

C. H. O'DONOHUE

Philip Morris Research Center, Box 26583, Richmond, Va. 23261

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A study was undertaken to familiarize our users with selected data bases, and to determine the quality of services offered by various information centers. This paper presents an analysis of five commercial service centers and various data bases. A current awareness profile covering both chemical and botanical fields was sent to each service center. The responses were evaluated on the basis of promptness, interaction with the user, and physical format of the listing. Also evaluated were the various data bases on content, printout format, and ease of manually checking citations.

The Philip Morris Research Center has a Technical Information Facility (TIF) which serves over 200 professional staff scientists. The relatively modest size of the TIF staff and of our library holdings does not permit us to provide complete, in-house information services. Therefore, we employ various commercial services to complement our own efforts. These outside services have computerized data bases which we find useful, but too expensive to purchase for processing in our own facilities. The present paper is a comparative evaluation of the services we have employed.

About a year and a half ago we decided to develop a Selective Dissemination of Information (SDI) program for a laboratory group which had a definite need to be kept abreast of current developments in its area. The group had a project encompassing both chemical and botanical fields. We picked data bases which we knew, *a priori*, would be pertinent as well as others whose potential utility was less certain. Our major objective (besides providing assistance for the laboratory personnel) was to determine which data bases and service groups would best serve our present and future needs.

After discussions with various sales representatives, four services were selected (Table I): BioSciences Information Service (BIOSIS), Institute for Scientific Information (ISI), Knowledge Availability Systems Center at the Uni-

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