Commercial Document Suppliers:
How Many of the ILL/DD Periodical Article
Requests Can They Fulfill?

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Abstract

Commercial document suppliers have been capturing an increasing share of the document supply market. New data on the availability of periodical articles at five frequently used commercial suppliers are presented. The findings are based on samples of periodical requests processed through the OCLC PRISM ILL service over a recent twelve-month period. Of the 373 sample articles, 92 percent are available from at least one of these suppliers. Other related findings are: approximately 40 percent of all requests pertain to articles; one-fifth of all the articles are published in the preceding year; and 64 percent are published within a five-year-period. Date and format variables, taken together, can serve as a starting point for programmatically selecting and directing requests to commercial suppliers.

Introduction

Commercial document supply firms have served as an alternative to libraries for procuring copies of periodical articles for over twenty-five years. Given that photocopying technology was widely deployed only in the late 1960s, it is apparent that the private sector has been quick to find a market for document supply. Commercial document suppliers "generally operate for profit, do not support on-site borrowers, and are accessible in many ways, including online search services such as DIALORDER, bibliographic services such as OCLC and RLIN,..." (Hurd & Molyneux,
Interlibrary loan (ILL) literally refers to the act of one library lending an item from its collection to another library in response to a request from the latter. Loaned items are then returned. Once photocopying became affordable, libraries began to send copies of requested articles instead of loaning the source periodical. Copies of articles are not returned. Thus, erroneously, we have for a long time continued to use the term “interlibrary loan” to refer to the request or supply of copies of periodical articles. Just in the last few years have we begun to see the use of the term “interlibrary loan and document delivery (ILL/DD)” which fully reflects the services rendered.

The explosion in the demand for ILL/DD service during much of this decade and the previous one has been well documented (e.g., Farr & Brown [1991]; ARL Annual Statistics). The resultant financial and organizational strains and the increasing awareness of the cost of the ILL process are all prompting the profession to reassess the current uses of ILL/DD services (Roche, 1993). Incorporation into the ILL/DD operation of recent developments in technology, such as e-mail and the World Wide Web (WWW), which allow patrons to present requests electronically, has portended questioning of the best application of library staff labor. Unmediated access (without the ILL/DD staff effort to identify and select a lending library for each request) goes a step further in programmatically choosing a lending library for the sought item. Where consortial arrangements have been made, patrons borrow (or check out) a book directly from an off-site library (e.g., ILLINET online or OhioLink libraries). If unmediated access is possible for books, why not for periodical articles?

Baker and Jackson (1993) envision a future when requests for mainstream periodical articles are directed programmatically to the most cost-effective supplier (p. 9). The library staff would specify or modify the criteria for this automatic redirection. The expectation is that the commercial document supplier may be a cost-effective alternative to libraries. The hope is that automatic routing of qualified requests to commercial suppliers might relieve the ILL/DD staff from the labor-intensive task of identifying libraries which have the wanted items, request by request, and then selecting those libraries which meet the guidelines developed by the ILL/DD units.

This study presents new data on the availability of periodical articles at five frequently used commercial document suppliers. The research is based on the premise that, before exploring the feasibility of developing software for the unmediated processing of article requests, we need to investigate whether commercial document suppliers can handle the range of article requests ILL/DD units routinely receive from sister libraries. Availability data become useful interpreted in terms of the characteristics of the article requests and of the periodicals in which the articles appear. Characteristics of article requests and of periodicals are therefore pro-
vided, along with characteristics of the libraries which requested the articles.

Since copies of articles are not returned, the term "request" instead of "borrow" is used in this article. This study focuses on requests submitted to the OCLC ILL PRISM service over a recent twelve-month period. With the exception of public libraries and those which support specialized programs, requests for articles comprise a sizable volume of the ILL/DD activity in many types of libraries. Equally important, what is generally referred to as the serial crisis is felt most with respect to periodicals. These factors led to the choice of article requests over requests for other types of library materials.

COMMERCIAL DOCUMENT SUPPLIERS

Recent literature has drawn attention to the role of commercial document suppliers. In their book *Access versus Assets*, Higginbotham and Bowdoin (1993) devote an entire chapter to cover in depth the nature, scope, and characteristics of commercial document suppliers. In the book *Document Delivery Services: Issues and Answers*, Mitchell and Walters (1995) likewise devote a chapter to discuss commercial document suppliers. A study by Arthur D. Little in 1979 noted that the volume of document delivery by commercial document suppliers was increasing at a higher rate than interlending among libraries (Miller & Tegler, 1988, p. 352). Special libraries routinely use commercial document suppliers. In a 1994 survey of its members, the Association of Research Libraries (ARL) found that 87 percent of the respondents used commercial suppliers and 62 percent of respondents reported an increase in the use of document suppliers from the previous year (ARL, 1994). A slightly higher percentage of respondents projected a further increase in the following year. Even smaller community colleges are using commercial suppliers to either supplement or to completely replace libraries as suppliers, which is what the County College of Morris in New Jersey did (Kelsey & Davenport, 1993). Clearly the use of commercial document suppliers is on the rise (e.g., Leach & Tribble, 1993, p. 359).

Some commercial document suppliers (CDS) provide a range of services, including procurement of any type of document (e.g., periodical articles, government documents, patents, reports); libraries, however, tend to use CDS mainly for getting periodical articles. Even though CDS firms seem to be capturing an increasing share of the document supply market, it is probably fair to say that many libraries continue to obtain articles from sister libraries. Their preference for choosing sister libraries as suppliers seems natural and even valid because purchasing articles from commercial suppliers adds to the cost of ILL/DD service.

There is a brewing opinion, however, that it may be cost effective to purchase articles, given the requesting library's cost of labor for selecting
other libraries which provide articles for "free" (or minimal charge) and
the supplying library's cost of retrieving, copying, and dispatching ar-
ticles. An ILL/DD Performance Measures Study, funded by the Mellon
Foundation and directed by Jackson from the Association of Research
Libraries (ARL, Press Release, June 21, 1995) is expected to provide com-
parative data on the cost of obtaining periodical articles from libraries
and commercial sources.

Although the majority of CDS firms do not have in-house collections
of periodicals, the ready availability of periodicals may be critical for
fulfilling a large volume of requests in a guaranteed timely manner. Based
on the ARL survey finding (ARL, 1994) pertaining to selection of suppli-
ers by its members and based also on consultation with Mary Jackson, an
ILL national expert, five suppliers were selected: the British Library Docu-
ment Supply Centre (BLDSC), The Canadian Institute for Scientific and
Technical Information (CISTI), the Institute for Scientific Information
(ISI), University Microfilms Inc. (UMI), and UnCover. Except for
UnCover, all have a dedicated collection.

The British Library Document Supply Centre

The British Library Document Supply Centre was conceived as a cen-
tralized backup resource center for United Kingdom libraries. Begun as
the National Central Library in 1916, it was merged with the National
Lending Library for Science and Technology (NLLST) in 1973. The
division was renamed the British Library Document Supply Centre in
1986. The BLDSC has an impressive number of documents within its
broad collection including 220,000 journal titles, 500,000 theses, 300,000
conference reports, and 3 million books. The BLDSC also collects a large
number of government documents from the United Kingdom, United
States, Europe, and Asia.

The Canadian Institute of Scientific and Technical Information

The Canadian Institute of Scientific and Technical Information is an
arm of the National Research Council of Canada. Begun in 1916, the
National Research Council of Canada is the leading agency for research
and development in Canada. The National Science Library, which be-
gan in 1957, became CISTI in 1974. The collection is strong in science,
technology, and medicine. Although CISTI has many branches, its main
collection (over 50,000 serials) is housed in one building in Ottawa.

University Microfilms Incorporated

University Microfilms Incorporated began in 1938 as a resource for
microform editions of rare books. Purchased by the Xerox Corporation
in 1962 and subsequently by Bell & Howell in 1985, UMI expanded its
collection to include serials (periodicals and newspapers), dissertations,
and out-of-print books. UMI currently provides document delivery from
nearly 25,000 periodicals in any subject field with particular strength in
computer science, engineering, life sciences, medicine, business, education, humanities, and social sciences.

*The Institute for Scientific Information*

The Institute for Scientific Information was established in 1958 by Eugene Garfield who pioneered citation indexing for articles. The document supply service is an offshoot of its primary citation indexing service. The ISI collection covers 16,000 international journals, books, and proceedings in the sciences, social sciences, and the arts and humanities. ISI keeps recent periodicals (those published within the last five years) in-house for ready access. Older periodicals are housed off-site.

*UnCover*

UnCover is the database and document delivery service that has grown from the Colorado Alliance of Research Libraries (CARL). Begun in 1978 as an alliance of eastern Colorado academic libraries, it grew to encompass academic and public libraries, including those of the Colorado Western slope and Colorado State University. In 1993, CARL Systems joined with The Blackwell Group to form The UnCover Company, which was purchased subsequently by Knight-Ridder Information in 1995. The UnCover database includes over 16,000, mostly English-language, journal titles. Almost two-thirds of the titles pertain to science and technology.

*Summary*

Each supplier was contacted to obtain printed or electronic indexes to its periodical collection. The BLDSC sent us a CD-ROM copy of its serial collection; ISI and UMI provided their holdings information on diskettes. Indexes of CISTI and UnCover were searched via the WWW. All of the suppliers helped resolve ambiguous entries.

**PERIODICAL ARTICLE REQUESTS**

Approximately 8.5 million requests were processed through the OCLC PRISM ILL system between December 1994 and November 1995. OCLC samples 1 percent of ILL requests on a daily basis. From this 1 percent sample of ILL requests, 2,000 were randomly selected. The cataloging codes in fixed fields of matching bibliographic records in the OCLC World Catalog were used as filters to limit the sample to requests for articles from periodicals.

Figure 1 shows the distribution of the 2,000 ILL/DD requests by format. Requests for monographs, 47 percent, were removed. From the remaining 1,058 requests, monographic series and newspapers were eliminated. The technical definition of *periodical* includes annuals, semi-annuals, and irregular serials. In common usage, the term "periodical" usually refers to journals and magazines which are published at a regular
interval several times a year. Because the serial crisis is most pronounced for “periodicals” as commonly used, requests which referred to annuals, semiannuals, and irregularly published serials were further disqualified. The remaining 734 requests (approximately 37 percent of 2,000 ILL/DD requests) were for “periodical” articles.

The objective was to examine about 300 to 400 requests for regular “periodical” articles. As noted above, 734 of these requests were obtained. For analysis, 390 of these were randomly chosen. From this working set of 390 requests, 4 percent of the requests were disqualified because citations were incomplete (no volume, year, and/or pages). The findings presented herein are based on the remaining 373 article requests.

PROFILE OF REQUESTING LIBRARIES

Figure 2 shows that academic libraries generated 66 percent of the 373 requests. Of these requests, 14 percent were from major academic research libraries; junior college and medical libraries contributed 7 percent each; federal and public libraries accounted for 5 percent each. All other types of libraries together accounted for the remaining 10 percent of the requests. Four-fifths of the 373 article requests examined seemed to originate in academic environments.

ILL request forms require library staff to enter the library’s preferred method of delivery and the maximum cost the library is willing to pay. Of the requesting libraries, 66 percent indicated a preference for receiving
the article via U.S. mail library rate; 16 percent via courier service; 8 percent via first class U.S. mail; 5 percent via fax; and 1 percent via air mail. Another 1 percent was willing to pay for the fastest method possible. The remaining 3 percent did not indicate a preference.

How much are libraries willing to pay? Of the libraries surveyed, 29 percent wanted the article at no cost, while 14 percent of the libraries were willing to pay in the range of $1 to $5 with another 16 percent willing to pay $6 to $10. A quarter of the libraries were willing to pay anywhere between $11 and $20. Seven percent indicated that they were willing to pay between $21 and $50 while the remaining 9 percent were willing to pay any amount. Overall, nearly 60 percent wanted the article at $10 or lower.

That two-thirds of the libraries indicate a preference for article delivery via U.S. mail at library rate, and nearly 60 percent want the cost to be $10 or lower suggests that, while libraries may be trying for operational efficiency of ILL/DD units, they are not really allocating money for faster modes of delivery.

**Profile of Requested Articles**

Three attributes of wide interest were selected for characterization: (1) article publication date, (2) periodical scatter, and (3) subject dispersion.
Table 1 presents percentages of articles for selected intervals and the corresponding cumulative percentage. One-fifth of the 373 articles was published in the year preceding the year of the request. This percentage drops gradually as the articles age. Note that 64 percent of requests were for articles published within the previous five years, 88 percent within the previous fifteen years, and over 95 percent within the previous twenty-five years.

Table 1. Percentage of Article Requests by Publication Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage (n=373)</th>
<th>Cumulative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>1994</td>
<td>21</td>
<td>29</td>
</tr>
<tr>
<td>1993</td>
<td>14</td>
<td>43</td>
</tr>
<tr>
<td>1992</td>
<td>12</td>
<td>55</td>
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<td>1991</td>
<td>9</td>
<td>64</td>
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<td>1990</td>
<td>6</td>
<td>70</td>
</tr>
<tr>
<td>1989-1980</td>
<td>18</td>
<td>88</td>
</tr>
<tr>
<td>1979-1970</td>
<td>9</td>
<td>97</td>
</tr>
<tr>
<td>1969 or earlier</td>
<td>3</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2. Number of Requests per Periodical (Periodicals [n=120])

<table>
<thead>
<tr>
<th>Number of Requests</th>
<th>Percentage</th>
<th>Cumulative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>2-3</td>
<td>23</td>
<td>71</td>
</tr>
<tr>
<td>4-5</td>
<td>13</td>
<td>84</td>
</tr>
<tr>
<td>6-9</td>
<td>10</td>
<td>94</td>
</tr>
<tr>
<td>10 or more</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>
Periodical Scatter

In contrast to the concentration of requests for current articles, the requests are scattered with respect to periodical sources. Table 2 shows that 48 percent of the 120 periodicals received one request each. Eighty-four percent of the periodicals were requested by member libraries five or fewer times during a twelve-month period.

Subject Dispersion

The articles were categorized according to the subject area of the source periodical. Dewey Decimal Classification (DDC) is chosen over the Library of Congress Classification scheme because of its simplicity. Table 3 shows that one-third (32 percent) of the articles came from periodicals classed in social sciences (DDC 300). Nearly one-fourth (23 percent) of the articles pertained to applied sciences and technology (DDC 600) while another one-eighth (12 percent) were from mathematics and pure sciences (DDC 500). If the articles classed in DDC 500 are grouped with those classed in DDC 600, then the percentages of requests in sciences and social sciences are roughly equal.

Table 3. Subject Dispersion of Articles

<table>
<thead>
<tr>
<th>DDC Classes</th>
<th>Percentage (n=373)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>000s Generalities</td>
<td>6</td>
</tr>
<tr>
<td>100s Philosophy &amp; Psychology</td>
<td>9</td>
</tr>
<tr>
<td>300s Social Sciences</td>
<td>32</td>
</tr>
<tr>
<td>500s Natural Sciences &amp; Math</td>
<td>12</td>
</tr>
<tr>
<td>600s Technology (Applied Sci)</td>
<td>23</td>
</tr>
<tr>
<td>700s The Arts</td>
<td>4</td>
</tr>
<tr>
<td>800s Literature &amp; Rhetoric</td>
<td>1</td>
</tr>
<tr>
<td>900s Geography &amp; History</td>
<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>11</td>
</tr>
<tr>
<td>All</td>
<td>100</td>
</tr>
</tbody>
</table>

*No article requests fell in either the 200s (religion) or 400s (languages)

While strong demand for recent publications is not surprising, the extent of this skew is illuminating. Were it not for this phenomenon of article dispersion among a vast array of both subject-direct and ancillary periodicals, user needs could be fulfilled to a greater degree from the collections of the requesting libraries.
Profile of Periodical Titles

Periodicals can be characterized in a number of ways. We selected four common attributes of periodicals: (1) country and language of publication, (2) age of periodical, (3) type of publisher, and (4) price. An examination of these attributes may explain why it has been necessary to obtain the periodical article through the ILL/DD service.

Country and Language of Publication

Country and language of publication should not be significant barriers to subscribing to periodicals. Major publishers tend to be multinationals, and the English language is predominant in scientific and scholarly communication.

Age of Periodical

Age of a periodical is obtained by subtracting the year the periodical was launched from the current year. Older periodicals, especially those launched fifty or more years ago, are likely to pertain to classical disciplines of study. An example is the Transactions of the American Entomological Society, which began publication in 1879. An older periodical may also be of general interest, such as Donahoe’s Magazine, which also began in 1879. The former ceased in 1889, and the latter ceased in 1908. Both appeared in the study sample.

As new knowledge is gained, new specialties are born, which in turn give rise to periodicals in the new areas of study. New periodicals are also started sometimes as vehicles for communicating social issues or concerns. In this study, two articles were requested from two new periodicals which began in the same year as the requests for ILL/DD were placed. Two periodicals, Narcotics Enforcement and Prevention Digest and Violence Against Women, began in 1995.

As is the case with many bibliometric distributions, the age distribution of the periodical titles is not normal (see Table 4). Note that nearly 50 percent of the periodicals were started in the most recent twenty years; 25 percent of the titles began publication in the most recent ten years. These data seem to support the fact that emerging periodicals add to the financial strain libraries face in view of upward spiraling serial prices.

Type of Publisher

Publishers of periodicals were grouped into four categories: (1) for-profit (e.g., Blackwell, Academic Press), (2) professional or trade associations and societies (e.g., Central States Speech Association, American Entomological Society), (3) universities and colleges (e.g., Harvard University, National College of Teachers of the Deaf), and (4) civic or cultural institutions (e.g., The Whale Museum).

For-profit publishers comprised the largest category, producing over 50 percent of the periodical titles in the sample. One-third of the peri-
Table 4. Percentage of Periodicals by Starting Years (Periodicals [n=120])

<table>
<thead>
<tr>
<th>Start Years</th>
<th>Percentage</th>
<th>Cumulative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-1990</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>1989-1985</td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>1984-1975</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>1974-1950</td>
<td>30</td>
<td>80</td>
</tr>
<tr>
<td>1949-1900</td>
<td>14</td>
<td>94</td>
</tr>
<tr>
<td>&lt; 1900</td>
<td>3</td>
<td>97</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
<td>100</td>
</tr>
</tbody>
</table>

Periodical titles (33 percent) were published by professional associations or societies and 11 percent by universities. The remaining 5 percent of the periodicals were from civic or cultural institutions.

**Price**

Subscription prices of periodicals were obtained from reference sources, primarily EBSCO. The median subscription price of a periodical is $98.50. The price distribution is not normal as revealed by the average subscription price of $289. Periodical prices by the three major publisher types are shown in Figure 3. Note that the median price of periodicals from for-profit publishers ($175) is more than three times the median price of periodicals from professional/trade associations ($55). Periodical prices were also broken down by broad disciplines based

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**Figure 3. Median and Mean Subscription Prices**
on DDC classification. The median subscription prices for three large classes of periodicals were: social sciences, $96; technology, $165; and sciences, $305. A comparison of prices based on the number of library holdings for each periodical title did not reveal any pattern.

In summary, an overwhelming majority of the periodicals are published in the English language in a handful of Western countries. Because this is a well-recognized fact, percentage breakdowns are not included. Most periodicals needed for article references were of recent publication and over half were produced by for-profit publishers. The average periodical subscription price varies by publisher type, with the for-profit publisher price being substantially above the others.

Availability of Articles at Selected Suppliers

Checking for article availability from suppliers results in three possibilities. The supplier may: (1) have the specific issue of the periodical in which the article was published, (2) have the periodical title but not the specific issue in which the article appeared, and (3) not have the periodical title at all. Uncover alone provides indexing at the volume and issue level. Although in exceptional cases the cited volume could be missing at suppliers, these collections (except Uncover) do not have on-site users as libraries do. Based on inquiries to staff at BLDSC, CISTI, and UMI, it was assumed that the supplier had the volume unless otherwise indicated. Whenever holdings descriptions were ambiguous, the respective suppliers were contacted, and the problems were discussed and resolved.

ISI indicates whether the volumes are held on-site, off-site, or whether other collections are used. ISI stores periodicals over five years old at a remote site. Retrieving an article from off-site storage increases turnaround time. Because the focus of this study is availability, not speed of delivery, the availability score for off-site collection was collapsed with the score for on-site collection. In instances where outside collections were given as a resource, we recorded that article as unavailable.

Percentages of article availability at the suppliers which are presented here should not be interpreted as performance indicators. Whether a supplier is likely to have the sought article, as noted, depends on its primary mission and the scope of the collection which reflects its mission.

Overall, 92 percent of the 373 sample articles were available from at least one document supplier. All five suppliers held 7 percent of all the articles. At least four of the five suppliers held 17 percent of all the articles. At least three suppliers held one-third (33 percent), while at least two held one-fourth (24 percent) of all the articles, while none of the suppliers could offer 8 percent of the articles.

The percentages which follow refer to scores based on volume availability. As shown in Figure 4, the BLDSC has 81 percent of the articles; CISTI, 39 percent; ISI, 53 percent; UMI, 57 percent; and Uncover, 53
percent. As also shown in Figure 4, small percentages of articles were not available even when the suppliers carried the periodical titles, since the specific volumes were unavailable. At BLDSC, 13 percent of the articles were not available because it did not collect the periodical (Figure 4). The corresponding percentages for CISTI, ISI, UMI, and UnCover are 58 percent, 37 percent, 39 percent, and 21 percent, respectively. Eleven periodical titles required for article requests were not available at any of the suppliers, as shown in Table 5.

Table 5. Periodicals Not Available at Any Supplier

<table>
<thead>
<tr>
<th>Periodical Titles</th>
<th>Article Publication Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donahoe's Magazine</td>
<td>1899</td>
</tr>
<tr>
<td>Teacher of the Deaf</td>
<td>1975</td>
</tr>
<tr>
<td>Ancestry Newsletter</td>
<td>1986</td>
</tr>
<tr>
<td>Cetus</td>
<td>1987</td>
</tr>
<tr>
<td>The Plough</td>
<td>1990</td>
</tr>
<tr>
<td>The Teaching Professor</td>
<td>1990</td>
</tr>
<tr>
<td>M Inc.</td>
<td>1990</td>
</tr>
<tr>
<td>Communications &amp; Strategies</td>
<td>1991</td>
</tr>
<tr>
<td>Choice</td>
<td>1991</td>
</tr>
<tr>
<td>The Common Boundary</td>
<td>1994</td>
</tr>
<tr>
<td>The Psychotherapy Letter</td>
<td>1994</td>
</tr>
</tbody>
</table>

Since the late 1980s, a few studies have measured performance of commercial suppliers (e.g., Miller & Tegler, 1988; McFarland, 1992; Pederson & Gregory, 1994). Fill rate or success rate (i.e., the number of articles received from a supplier as a percentage of the number of articles requested in the study) comes close to measuring availability. In several of these studies, the supplier was selected for the subject strength. It would be erroneous to compare the findings of this study with those of the aforementioned studies, since this study focused on the availability of a common pool of requests at each of the suppliers in a uniform manner.

KEY FINDINGS

Availability of Articles at Suppliers

The primary purpose of this study, as noted at the outset, was to examine whether commercial suppliers can handle the range of article requests ILL/DD Units routinely process. Again, the following data do not
reflect upon supplier performance, as article availability is significantly affected by the individual supplier's primary mission. The findings suggest that the five suppliers together can fulfill 92 percent of all article requests. Of the five, the BLDSC alone can respond to 81 percent of the article requests. The BLDSC's score is nearly 25 percentage points higher than that of UMI, 28 percentage points higher than that of both ISI and UnCover, and 42 percentage points higher than CISTI (see Figure 4). Why is the availability score for BLDSC so much higher than for others? Perhaps because BLDSC was conceived as a resource center to serve other libraries in the United Kingdom. The underlying notion was that it would be more efficient to send a patron request directly to a centralized source instead of one library trying to borrow from another.

While CISTI's primary function is also to serve as a national resource (for Canada), its explicit mandate to support science, technology, and medicine lowers its overall score. As noted, unlike other performance studies, the requests were not presorted by collection strength. Each request in the sample was checked for availability at all five suppliers. Although UMI and ISI are key players in the document supply business, they were not founded for operating primarily as resource centers for libraries of all types.

UnCover, like BLDSC, was formed to operate as a document supplier. Although it does not have a unified physical collection in one place, UnCover's arrangement with the participating libraries is such that the availability score for UnCover is impressive. Given that it was started in the late 1980s, a score of 53 percent for availability is striking. A distinguishing feature of UnCover is the availability of indexes for searching periodicals at the volume and issue level.

Magnitude of ILL/DD Requests for Periodical Articles

As noted, this study began with a comprehensive sample of requests submitted to the OCLC ILL PRISM System. Requests which were not appropriate for the study objective were systematically eliminated—to examine requests for articles from periodicals, i.e., periodicals as commonly used. Instead of filtering step by step, the initial sample could have been limited to periodical articles. However, the approach used provided insight on the magnitude of demand for ILL/DD in various formats (e.g., books, newspapers, and so on). Because the findings are based on just one sample, the corresponding format percentages for about 85,000 requests (1 percent of 8.5 million requests) were compared at the close of the study. Remarkably, the proportions are exactly the same, except for the "periodicals" category which was 5 percentage points higher in the 1 percent sample than in the study sample (refer to Figure 1 for study sample percentages). It is therefore a safe assumption that approximately 40 percent of the requests processed through the OCLC ILL PRISM System relate to periodical articles.
Share of Article Requests by Library Type

Among OCLC membership, academic libraries constitute the largest group, accounting for 26 percent of the membership. It is worth noting that 66 percent of the 373 requests were placed by academic libraries. The public libraries comprise roughly 13 percent of the membership, whereas their share of article requests is 5 percent. The percentage of requests from junior college and medical libraries, however, were about the same as their relative size in the membership (roughly 7 percent each).

Measure of Demand for Recent Articles

The finding pertaining to the distribution of article publication dates merits mention. Based on age as derived from the year of publication, Table 6 compares the distribution of the data in this study with that of the 1 percent sample and that of the Williams and Hubbard study (1991). The heavy demand for articles published within five years (two-thirds or more of total article requests) is pronounced in all three sets of data. While many of us may have had a general sense that recent publications are in much demand, this collocation of data offers empirical evidence of this trend.

Conclusion

The findings of this study suggest that criteria can be specified for developing software which could relieve libraries of the labor-intensive task of identifying suppliers which fulfill typical periodical requests. Just

Table 6. Distribution of Age of Article Requests

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Study Sample n=373</th>
<th>1% Sample n=30,198</th>
<th>Williams &amp; Hubbard Data* n=3,208</th>
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* Source: Williams & Hubbard (1991)
two variables, the format and date of the request, together can go a long way in selecting and batching requests which have high probability of being supplied by the commercial segment. In any real operation, speed of delivery and cost for the service will obviously be included in choosing an appropriate supplier.

Commercial document supplier availability information for periodicals at the volume/issue level is important. Ideally, a union catalog of periodicals which are available at the major document suppliers would be developed. In the absence of such a tool, library staff must search indexes of one supplier after another. Perhaps this is one of the reasons which is contributing to libraries' preference for working with sister libraries. Although the periodical holdings information of libraries is inadequate, what is available is at least brought together in the form of union catalogs.

It is now well established that users are reluctant to pay any more than $2 to $4 for an article. This reluctance may stem partly from the fact that the user requests an article with some uncertainty that it will contain the "information" desired. If users were able to read an abstract first and develop a higher level of confidence in receiving the desired information, they might be willing to pay more. This ability to browse the abstract first would also tend to reduce requests for articles which were not pertinent.

The overwhelming demand for recent articles suggests that, in the long run, the stress ILL/DD units face may perhaps lessen as periodicals released in full text via online or CD-ROM grow in number. As Cornish (1991) notes: "The future for document supply is full of change and challenge" (p. 133).

ACKNOWLEDGMENT

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REFERENCES


