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Just How Right Are the Customers? An Analysis of the Relative Performance of Patron-Initiated Interlibrary Loan Monograph Purchases

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Just How Right Are the Customers? An Analysis of the Relative Performance of Patron-Initiated Interlibrary Loan Monograph Purchases

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Abstract
There has been a flurry of interest in programs for collection development through patron-initiated requests. However, some librarians have been concerned that such methods run the risk of producing idiosyncratic collections with poor usage and poor use value. The University of Nebraska-Lincoln Libraries have operated such a program through the Interlibrary Loan Department over a fiveyear period. The following study assesses the relative performance of the program's interlibrary loan–acquired monographs in terms of prices paid per rates of annual circulation, relative use at the topical level, and annual rates of circulation.

Keywords: patron-driven acquisitions, acquisitions, collection development, purchase-on-demand, patron-initiated collection development, interlibrary loan, use study, circulation statistics

Introduction

To meet their patrons' needs, many libraries have started purchasing selected books requested through interlibrary loan (ILL). When discussing such a program, however, the authors have found some academic librarians to be slightly wary. Librarians' concerns largely center upon governance of the collection as expressed in collection development policies, librarians' knowledge of what departments and colleges will require, and university documents detailing current and future campus priorities. Librarians worry that patrons know little and care less

for such things and are interested solely in meeting their own immediate needs. Collection development driven by patron requests, therefore, runs the risk of producing a collection of idiosyncratic materials that could see little use and would, therefore, have an ineffective, or poor, use value (Comer and Lorenzen 2006).

Background

Over five fiscal years (2003/2004 to 2007/2008), the University of Nebraska-Lincoln (UNL) University Libraries has managed a small purchase-on-demand program through its ILL department on a continuing trial basis. The UNL University Libraries include the Don L. Love Memorial Library and six branch libraries, which, together with the Marvin and Virginia Schmid Law Library, house roughly three million print volumes and maintain over 44,000 current serial subscriptions (University of Nebraska-Lincoln Libraries 2009a).[1] The UNL Libraries' ILL department is a vital part of the libraries' access services and, during the trial period, handled an average of 50,902 ILL borrowing and lending transactions per year (University of Nebraska-Lincoln Libraries 2009b). The UNL Libraries' ILL purchase-on-demand program was co-initiated by the ILL department and the Collection Development Committee and implemented at the beginning of the 2003 fiscal year. As was the case with the many similar programs that have been reported in the literature, the UNL program adopted some guidelines to ensure that materials requested through the program would be suitable. For example, there was a cost ceiling (initially $75 and currently $175); books had to be published within the last three years; exclusions include undergraduate-level textbooks, popularinterest books, computer or lab manuals, fiction, plays, and poetry; and so forth. The UNL University Libraries have historically purchased books for the circulating collection via one of four channels: approval plans; librarians' firm orders; donor bequests (in essence, approval plan–style orders paid for with targeted donated funds); and lost book replacement orders. To these, the ILL program added a fifth option: book orders placed via patron-initiated ILL requests, which amounted to 2.1% of books acquired and 2.4% of spending during the five-year trial period.

To assess the impact and relative performance of the ILL-acquired books, the authors queried the online catalog in December 2008 for a list of all books available for circulation that had been acquired and made available for checkout during the trial period. Table 1 shows that approval plan books and librarians' firm orders made up the overwhelming bulk of acquisitions. As expected, given past research on library circulation, the authors discovered that only a slight majority of the materials had circulated at least once. Figure 1 shows that just over 46% of books had not yet circulated, 26% had circulated once, 13% had circulated twice, and the remaining 15% had circulated three or more times (note: throughout the study, percentages have been rounded to the nearest whole or one-tenth of one percent, and other reported values have been rounded to no more than three decimal places).

Table 1. UNL University Libraries: General Characteristics of Recent Acquisitions

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	Totals
Volumes acquired	16,978	15,228	16,408	13,907	7,420	69,941
Approval plan	8,664	7,814	8,274	7,289	4,581	36,622
Firm orders	6,717	6,666	7,243	5,945	2,344	28,915
Donor bequests	522	418	442	282	205	1,869
Lost book	743	28	160	74	79	1,084
Patron-initiated ILL	332	302	289	317	211	1,451
Total spending	$805,108.55	$739,377.35	$864,361.41	$710,002.44	$380,412.37	$3,499,262.12
Approval plan	$428,634.09	$382,081.26	$417,248.36	$365,113.81	$229,206.43	$1,822,283.95
Firm orders	$315,347.74	$325,664.96	$405,110.52	$308,740.91	$131,189.85	$1,486,053.98
Donor bequests	$17,466.84	$13,149.75	$13,699.55	$12,458.26	$6,629.74	$63,404.14
Lost book	$24,402.95	$1,386.23	$10,718.78	$3,977.13	$3,417.41	$43,902.50
Patron-initiated ILL	$19,256.93	$17,095.15	$17,584.20	$19,712.33	$9,968.94	$83,617.55
Total circulations (2003–2008)	29,295	21,612	18,252	11,946	4,136	85,241
Approval plan	13,426	9,768	8,074	5,357	2,097	38,722
Firm orders	12,967	10,552	8,972	5,737	1,520	39,748
Donor bequests	273	230	134	86	66	789
Lost book	1,279	59	204	82	86	1,710
Patron-initiated ILL	1,350	1,003	868	684	367	4,272

The decrease in firm ordering in 2006–2008 may be largely attributed to budgetary constraints. The decrease in approval plan acquistions may in part be attributed to a switch in vendors in the middle of the 2006/2007 fiscal year and the implementation of a more restrictive approval plan.

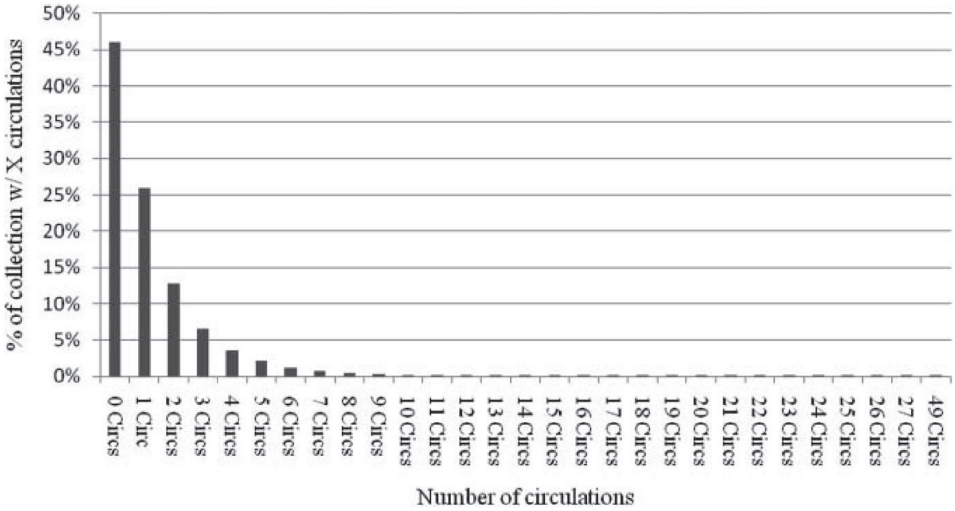

Figure 1. Circulation frequencies for all recent acquisitions, 2003/2004–2007/2008.

Analysis of ILL Requests

Several earlier studies indicated that at larger institutions, graduate students or faculty made most of the filled purchase requests and that most of these requests came from patrons affiliated with the arts and humanities or the social sciences (Anderson et al. 2002; Ward 2002; Bombeld and Hanerfeld 2004; Houle 2004; Foss 2007; Way 2009). Figures 2a and 2b reveal that the filled requests of the UNL Libraries' program appear to be fairly typical: graduate students and faculty members made 74% of filled requests; arts and humanities and social science affiliates made 66.4% of filled requests.[2]

Analysis of Recent Acquisitions' Performance

Thus, it would seem that the UNL University Libraries' ILL purchase-on-demand program has been fairly typical. The relative size of the ILL program's budget, the behavior of the collection where circulation is concerned, and the pattern of patron requests all seem to be fairly closely in accord with the experiences and results reported by others. Although librarians at UNL have been pleased with the program, there have been concerns that ILL acquisitions could have poorer use value because of potentially higher prices paid for the books (approval and firm-ordered books come with discounted pricing) and because of their potential to be on topics of limited interest. Colleagues have also expressed doubts as

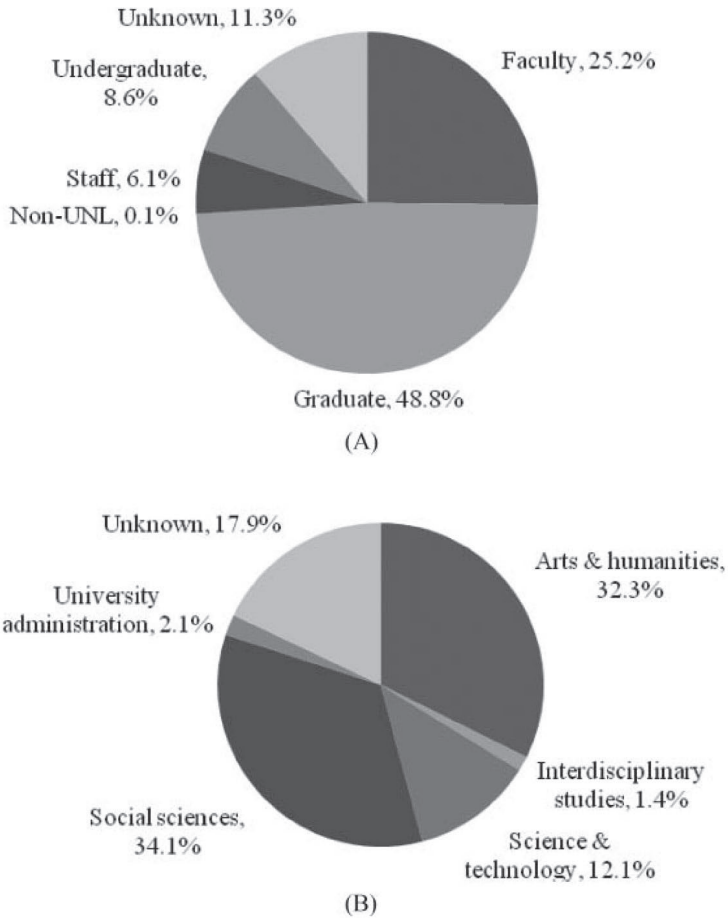

Figure 2. Percentage of interlibrary loan purchases by patron type (panel A) and by disciplinary affiliation (panel B).

to whether ILL purchases really circulate significantly more than do books purchased through traditional channels. To address these concerns, the authors will assess the short-term performance of UNL's ILL purchase-on-demand books against the performance of books added concurrently to the circulating collection via traditional means.

Effective Use Value

To address the issue of effective use value (see the Appendix for definition), the authors decided first to calculate the average stock turnover rates (see the Appendix for definition) of the recently acquired books as a whole, of the books acquired via traditional means, and of the books acquired via the ILL program

and to employ these rates as a measure of use (note: in-house use had not been collected) (Baker and Wallace 2002). The authors found the average stock turnover rate for all of the recently acquired books to be approximately 0.42 circulations, or nearly one circulation every 2.4 years. To determine how relatively cost-effective these recent book purchases had been, the authors then attempted to calculate the resultant average cost of an annual circulation, or the use value (see Appendix) (Cohen and Kern 1979). Unfortunately, data for the UNL Libraries' fixed costs (e.g., administration, maintenance, storage, and opportunity costs) and for total variable costs (i.e., all costs related to ordering and acquisition) had not been collected. Thus, the authors employed the data that were available: the prices paid for the books. So, to summarize, the question was as follows: what, in effect, was the average price of an annual circulation for the UNL Libraries' recent acquisitions, given the total amount paid for the books and their total calculated stock turnover? For the 69,941 recently acquired books, the library paid an average of $50.03 per book and had an average use value ratio of $119.83:1 annual circulation.[3]

Before comparing the use values of ILL-acquired and traditionally acquired books, the authors elected first to reduce the data set to only those Library of Congress (LC) subclasses with both ILL and traditional acquisitions with calculable values.[4] These adjustments left 64,732 traditionally acquired books (94.5% of traditionally acquired books) and 1,445 ILL-acquired books (99.6% of ILL-acquired books) in 134 LC subclasses. The authors repeated the calculations above for the traditionally acquired books and found that they had a stock turnover rate of 0.41, an average price of $49.99, and a resultant average use value ratio of $122.34:1 annual circulation. Similarly, the ILL-acquired books had a stock turnover rate, average price, and an average use value ratio of 1.05, $57.63, and $54.99:1 annual circulation, respectively. When the authors compared the head-to-head performance of the books grouped into each of their 134 LC subclasses, they found that ILL-acquired books had more effective average use value ratios in 119 (89%) of the subclasses. It should be noted that this favorable imbalance occurred despite traditionally acquired books' having lower average prices paid in 85 subclasses.[5]

An objection raised to the above approach was that the purchase-ondemand and traditional acquisition represent two different modes of acquisition with different purposes and that the ILL books have an inherent advantage in that they were guaranteed at least one circulation upon acquisition, while traditionally acquired books must wait on the shelves to be discovered. Partly to rectify this imbalance, the authors repeated the above assessment but included only those traditionally acquired books that had circulated. This recalculation reduced the number of traditionally acquired books to 34,604. These books' average price was $48.88, and their stock turnover rate was approximately 0.76, which was still well below the ILL books' rate. Their resultant average use value ratio proved to be $63.92:1 annual circulation, which was also slightly

worse than the ILL-acquired books' use value. When comparing the grouped acquisitions against one another in their LC subclasses, the authors found that ILL books outperformed traditionally acquired books in 83 of the 134 LC subclasses. So, even after removing the main handicap for traditional avenues for library acquisition, ILL-acquired books still provided comparable and perhaps even slightly more effective use value where prices paid and stock turnover rates were concerned.

Topical Idiosyncrasy

To address the issue of potential topical idiosyncrasy (see Appendix), the authors examined into which LC subclasses the ILL purchase-on-demand program's acquisitions fell and then assessed the relative performance of these subclasses by comparing them to the average relative use factors (see Appendix) of the 257 LC subclasses that had had collection acquisitions during the interval. The expectation underlying these calculations was that the use and holdings of each LC subclass should be proportional; if discrepancies between proportional use and holdings were discovered, then the LC subclass(es) in question would have been either relatively underutilized or overutilized (Bonn 1974; Mills 1982). For the assessment, the authors elected to use Mills' percentage expected use rather than a simple ratio of use to holdings because most readers will find percentages easier to read. Also, rather than calculate merely a circulations-to-holdings ratio to identify the subclasses with the greatest relative circulation, the authors also calculated a volume-use-to-holdings ratio to discover how well distributed across the purchased books the circulations were within each LC subclass. The circulation-based metric will provide a relative indicator of how much the books in an LC subclass had circulated. The volume use–based metric should provide a relative indicator of how widely distributed circulation activity was across all of the books in an LC subclass.

In the resultant scatter graph (Figure 3), the intersection of the figure represents the average of averages for the 257 LC subclasses that had acquisitions during the interval. The plotted points show the relative performance of the 140 LC subclasses that had ILL acquisitions. Subclasses plotted in the large upper right-hand quadrant (henceforth Q1) experienced higher than average stock turnover rates and had a higher than average percentage of books circulate. In other words, the books were checked out comparatively often, and the checkouts were spread across a better-than-average number of books. Subclasses plotted in the lower right-hand quadrant (Q2) experienced higher than average stock turnover rates, but that turnover was concentrated in a lower than average percentage of books. Subclasses plotted in the upper left-hand quadrant (Q3) experienced lower than average stock turnover rates, but a higher than average percentage of books were circulated. Last, subclasses plotted in the lower left-hand quadrant (Q4) experienced lower than average stock turnover rates and relatively less book use.

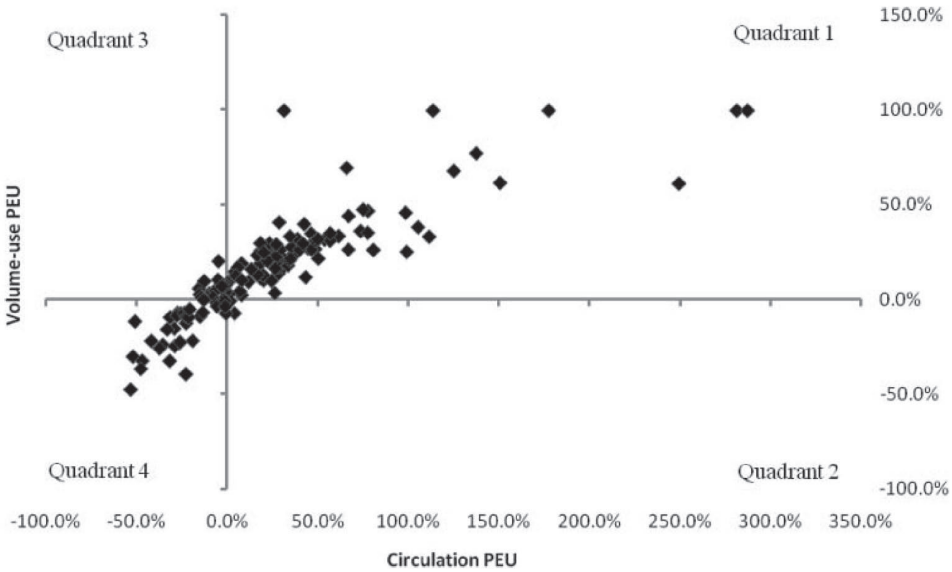

Figure 3 Percentage expected use (PEU) of Library of Congress subclasses with interlibrary loan purchases relative to the collection average of averages.

As Figure 3 shows, roughly 61.4% of the LC subclasses with ILL acquisitions fell into Q1, 1.4% fell into Q2, 12.9% fell into Q3, and 24.3% fell into Q4, the least desirable of the quadrants. What was perhaps most impressive about these results was not their distribution, which did reflect very favorably on the ILL program, but the composition of the quadrants. The LC subclasses in Q1 accounted for 77.1% of the books acquired via the ILL program and 76.1% of the monies spent. The LC subclasses in the slightly less desirable Q2 (1.2% acquisitions; 2.0% spending) and Q3 (12.5%; 10.8%) accounted for just over half of the remainder, and ILL acquisitions in Q4 (9.2%; 11.2%) accounted for just under half of the remainder. Thus, roughly 90.8% of ILL acquisitions and 88.9% of the program's spending fell into quadrants with above-average use of some sort, and most of those acquisitions fell into the relatively high-circulation/high–volume use Q1. While this method cannot address the utility of any particular book ordered, it does illustrate that the library's patrons did an excellent job of ordering titles that fell within the higher-use and more mainstream topical areas of the collection, as defined by LC subclass, and of avoiding excessive additions to more topically remote and little-used areas. Selection guidelines may also have influenced the fact that more mainstream titles were purchased. Nevertheless, with some guiding parameters in place, library patrons appear to do well at selecting topically appropriate books for the collection. This conclusion follows conclusions in other studies (Anderson et al. 2002; Ward et al. 2003; Chan 2004; Ruppel 2006; Way 2009).

Circulation Performance

Last, to address the issue of potentially significant differences in amounts and rates of circulation, the authors, following the lead of earlier studies, assessed what percentage of the books of each order type had zero, one, or more total circulations. Several studies had indicated that the books purchased via ILL purchase-on-demand circulated more than did items acquired by traditional means and that such books were more likely to have circulated multiple times (Perdue and Van Fleet 1999; Anderson et al. 2002; Ward 2002; Allen et al. 2003; Ward et al. 2003; Bombeld and Hanerfeld 2004; Brug and MacWaters 2004; Chan 2004; Houle 2004; Campbell 2006; Zopfi-Jordan 2008; Way 2009). The books purchased through the UNL Libraries' program appear to have followed the general trend, as Figure 4 illustrates. Sizeable percentages of the books acquired via traditional channels had not circulated at the time data collection was completed, while only 1.3% of the ILL purchases had zero recorded circulations (i.e., the books were requested but never picked up).[6] Also, much larger percentages of the ILL-acquired books had experienced multiple circulations.

This simple figure, while intuitively persuasive, does not, of course, establish that there were statistically significant differences in performance among the five avenues of acquisition where stock turnover rates were concerned. Before testing for differences, the authors tested for the normality of the data and for other proper distributions and found UNL's data not to be normal, log normal, Weibull, or gamma, so the authors turned to nonparametric methods and, as there were one nominal and one measurement value and samples with similar

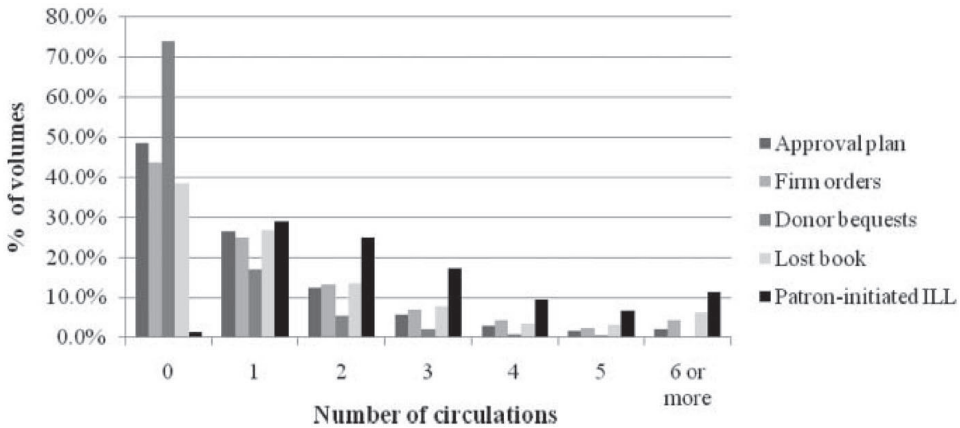

Figure 4. Number of circulations by order type.

Table 2. Acquisition Types by Annual Stock Turnover Rate (All Acquisitions)

Analysis Variable: Annual Stock Turnover					
Acquisition Type	Volumes	Mean	SD	Minimum	Maximum
Approval plan	36,622	0.363	0.571	0	12.0
Firm orders	28,915	0.470	0.720	0	13.067
Donor bequests	1,869	0.154	0.385	0	4.8
Lost book	1,084	0.461	0.697	0	7.636
ILL	1,451	1.047	0.763	0	6.486

Wilcoxon Scores (Rank Sums) for Variable Annual Stock Turnover (by Acquisition Type)					
Acquisition Type	Volumes	Sum of Scores	Expected under H_0	SD under H_0	Mean Score
Approval plan	36,622	1,230,199,244	1,280,707,962	2,533,004.41	33,591.809
Firm orders	28,915	1,049,273,800	1,011,186,465	2,497,526.61	36,288.217
Donor bequests	1,869	45,149,837.5	65,360,799	817,914.38	24,157.216
Lost book	1,084	39,810,624.5	37,908,564	626,480.6	36,725.668
ILL	1,451	81,473,205.5	50,742,921	722,880.03	56,149.694

Kruskal-Wallis Test	
Chi-square	2698.880
DF	4
Pr > Chi-square	<.0001

Average scores were used for ties.

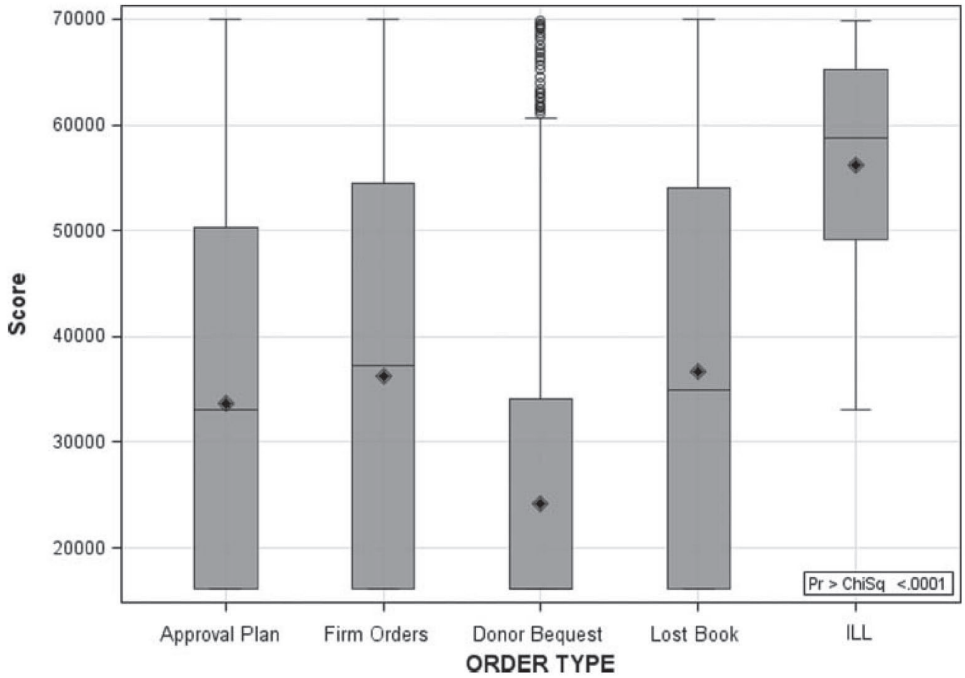

Figure 5. Distribution of Wilcoxon scores for annual turnover rates (all acquisitions).

Table 3. Acquisition Types by Annual Stock Turnover Rate (LC Subclasses with ILL Acquisitions Only)

Analysis Variable: Annual Stock Turnover					
Acquisition Type	Volumes	Mean	SD	Minimum	Maximum
Approval plan	35,460	0.366	0.573	0	12.0
Firm orders	27,014	0.477	0.725	0	13.067
Donor bequests	1,458	0.167	0.396	0	3.6
Lost book	1,016	0.460	0.679	0	7.636
ILL	1,448	1.047	0.763	0	6.486

Wilcoxon Scores (Rank Sums) for Variable Annual Stock Turnover (by Acquisition Type)					
Acquisition Type	Volumes	Sum of scores	Expected under H_0	SD under H_0	Mean Score
Approval plan	35,460	1,126,712,796	1,177,218,810	2,344,579.14	31,774.191
Firm orders	27,014	931,389,798	896,824,279	2,308,908.83	34,478.041
Donor bequests	1,458	33,771,600	48,403,413	688,797.67	23,162.963
Lost book	1,016	35,470,114	33,729,676	576,942.81	34,911.530
ILL	1,448	76,903,298	48,071,428	686,484.32	53,110.012

Kruskal-Wallis Test	
Chi-square	2524.914
DF	4
Pr > Chi-square	<.0001

Average scores were used for ties.

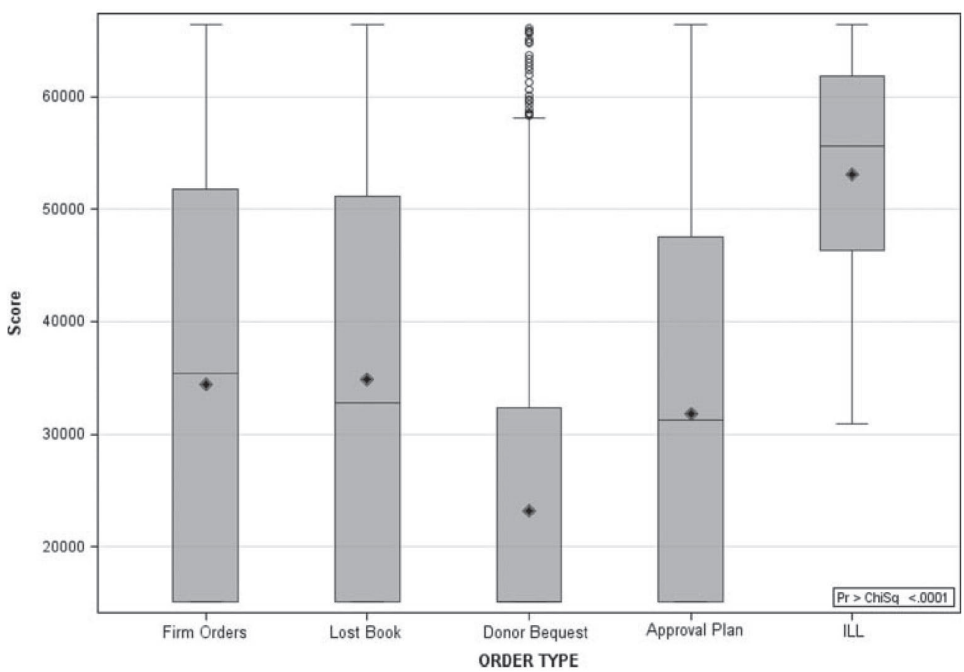

Figure 6. Distribution of Wilcoxon scores for annual turnover rates (LC subclasses with ILL acquisitions).

Table 4. Acquisition Types by Annual Stock Turnover Rate (Circulated Volumes)

Analysis Variable: Annual Stock Turnover					
Acquisition Type	Volumes	Mean	SD	Minimum	Maximum
Approval plan	18,343	0.707	0.627	0.185	12.0
Firm orders	15,242	0.838	0.787	0.185	13.067
Donor bequests	385	0.632	0.548	0.185	3.60
Lost book	634	0.732	0.730	0.185	7.636
ILL	1,427	1.061	0.759	0.194	6.486

Wilcoxon scores (rank sums) for variable annual stock turnover (by acquisition type)					
Acquisition Type	Volumes	Sum of scores	Expected under H_0	SD under H_0	Mean score
Approval plan	18,343	311,956,514	330,467,488	986,974.932	17,006.843
Firm orders	15,242	287,634,502	274,599,872	975,369.908	18,871.178
Donor bequests	385	5,898,871.5	6,936,160	202,986.587	15,321.744
Lost book	634	10,385,498.5	11,422,144	259,572.949	16,380.913
ILL	1,427	33,259,111	25,708,832	385,040.766	23,307.015

Kruskal-Wallis Test	
Chi-square	686.514
DF	4
Pr > Chi-square	<.0001

Average scores were used for ties.

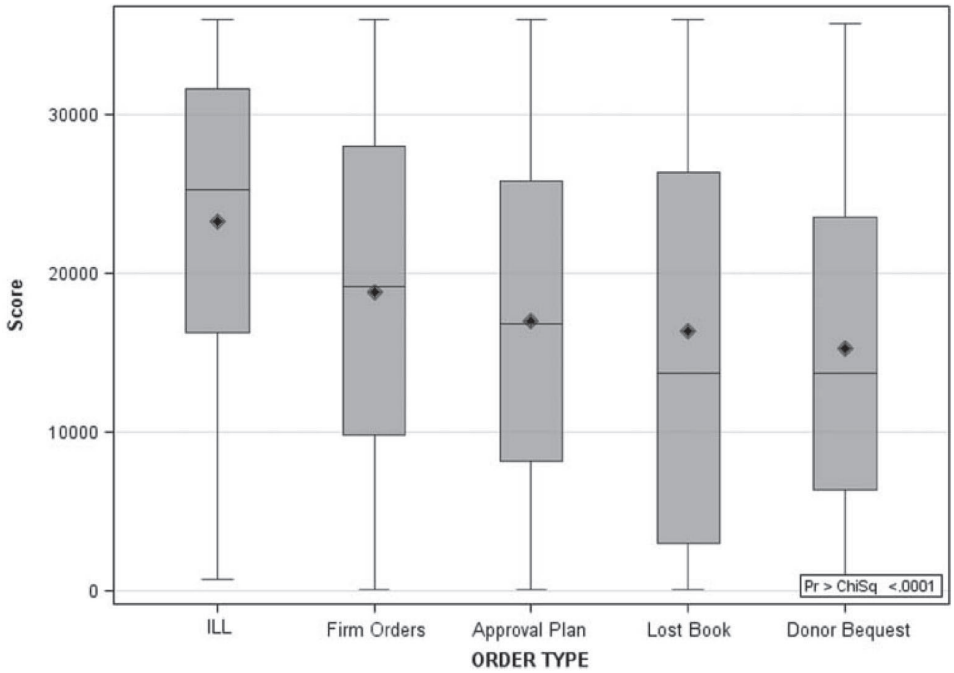

Figure 7. Distribution of Wilcoxon scores for annual turnover rates (circulated volumes).

shapes of distribution, performed the Kruskal-Wallis test (see Appendix) on the full data set (69,941 books in 257 LC subclasses). The test showed that when the five order types' books' annual turnover rates were compared, ILL purchasing had the highest stock turnover rates on average, donor bequests had the lowest, and there was definitely a significant difference among the five types (for values, see Table 2). For a graphical, more intuitively readable representation of the order types' performance, see Figure 5. In this Wilcoxon box plot, the gray bar represents the range between each order type's 25th and 75th percentiles, the dot represents the median score, and the bisecting segment line represents the mean score. The superiority of ILL acquisition's performance should be evident.

As was the case in the section on use value, the authors were cognizant that there could be some effects related to the LC subclasses without ILL purchases that could affect the results of the analysis, so, once again, the authors reduced the data set to the subset of LC subclasses that had had both ILL and other types of purchases (137 LC subclasses; 66,396 books) and repeated the Kruskal-Wallis test. The test once again revealed that there were significant differences among the five modes of acquisition and that ILL acquisition was, again, far and away the best performer (for values, see Table 3). This difference in performance is graphically represented in Figure 6.

To answer again the objection that ILL acquisitions unfairly begin their careers in the collection with a circulation advantage, the authors repeated the test a third time, this time further reducing the set of books by removing all books with zero circulations (134 LC subclasses; 36,031 books). The authors found that, even with their advantage in the circulation sweepstakes removed, the ILL-purchased books' stock turnover rates generally outperformed those of the other four order types (for values, see Table 4). While there were again differences between the five order types' performance, Figure 7 illustrates that the performance means and medians were much nearer to one another across acquisition types and that there was considerable overlap between the acquisition types' 25th to 75th percentiles. Still, patron-initiated ILL acquisition again outperformed the other order types.[7]

Conclusions

The UNL project confirmed findings in the literature indicating that purchaseon- demand programs at libraries of several types have been very successful at obtaining cost-effective materials that are not only suitable for their collections but also meet the needs of multiple patrons. Purchase criteria, processes and workflows, and vendors have varied from program to program, but the nature and quality of the success seem remarkably consistent. In the literature, patrons and librarians have responded favorably to such programs; several studies sug-

gest that such services are nearly as cost-effective as ILL and lead to increased efficiencies (Perdue and Van Fleet 1999; Ward 2002; Ward et al. 2003; Bombeld and Hanerfeld 2004; Brug and MacWaters 2004; Houle 2004; Comer and Lorenzen 2006; Coopey and Snowman 2006; Foss 2007). At the UNL Libraries, the books acquired via ILL purchase-on-demand seem largely to exhibit better use value as calculated. With guidelines in place to govern the appropriateness of the books acquired, UNL library patrons have done very well at selecting books topically suitable to the collection in that the great bulk of the books purchased fell within locally high-use LC subclasses. Last, and most important, the patron-requested books circulate at higher rates and experience elevated amounts of repeat circulation. If a library's purpose is, at least in part, to obtain items that patrons will want to borrow, then a purchase-on-demand program of some sort should be treated as a necessity, for such a program seemingly guarantees that its purchases will be relatively heavily used.

Limitations of the Study and Areas for Further Research

While the authors of the study are fairly confident of their findings and conclusions, this study had several limitations. Firstly, the study was nonexperimental, was conducted *ex post facto*, and was conducted at a single institution that may have had unusual local characteristics, so its potential to predict future outcomes and its generalizability may be somewhat hampered. However, the authors feel that the study's practical utility as a decision-supporting tool for librarians should be acceptable. Second, this study's sample of ILLacquired books was relatively small. It would have been preferable to have had a proportionally larger sample of ILL acquisitions so as to establish more firmly that the outsized positive results of the program were not merely the result of smaller samples' vulnerability to distortion by atypical cases. Last, this study assessed merely the short-term circulation performance of recently acquired books; statistics on in-house use were not collected. The study also left open the possibility that the results reported here could be reversed by late surges in circulations of books acquired via the approval plan and firm orders. The literature suggests that such a surge would be highly unlikely (Davidson 1943; Fussler and Simon 1969; Trueswell 1969; Bulick et al. 1979; Hardesty 1981; Eldredge 1998), but an increase in later uses could occur. Thus, the authors would suggest that studies on purchase-on-demand could benefit from a meta-analysis, if one could be performed. Barring such an analysis, the authors would be interested to discover, in practical terms, just how greatly such a program could be expanded, in terms of acquisitions and budget allocation, before it lost its performance advantages. There is also the possibility that an overly expanded program could lose its public relations advantages: if it were expanded too greatly, library patrons might eventually begin to complain that libraries had become places to

order books rather than to find them. However, it does not seem from reading the current literature that the upward limit of purchase-on-demand's utility has yet been approached, and the authors are of the opinion that not only should such programs be implemented where they are lacking, but, where they are already extant, they should also be expanded.

Notes

1. The law college's library was excluded from the study.
2. Several articles on purchase-on-demand have speculated that undergraduates purchased fewer books because they make fewer ILL requests and that science and technology patrons purchased fewer books because low program price caps and high prices disqualified their titles. This program's request records suggest an additional culprit for science and technology undergraduates: the ban on lower-level textbooks.
3. Please note that fractional discrepancies between the use values reported and the values that may be calculated using reported average prices and stock turnover rates are the result of the rounding of reported values and not of mathematical error.
4. Of the 140 LC subclasses that had had ILL acquisitions, several were eliminated for various reasons: three had only ILL acquisitions, two subclasses' traditionally acquired books had zero circulations, and the one ILL book acquired in the subclass RK also had zero circulations, so no calculations could be performed.
5. In the case of LC subclass QA, the turnover rate for an indeterminable number of traditionally acquired books had been inflated by a staff person's circulating them internally to a new books display, but ILL books in QA still had a much better use value.
6. Data for initial circulations of ILL books acquired during the first three years of the program were collected manually, and items were credited with a circulation upon receipt. Thus, there may be a small error in the early data. If later data are indicative, roughly 30 to 33 ILL-purchased books may have been credited with a false circulation.
7. Test results for the Tables 2 through 4 and Figures 5 through 7 were produced using SAS software.

References

Allen, Megan, Suzanne M. Ward, Tanner Wray, and Karl E. Debus-López. 2003. Patron-focused services in three U.S. libraries: Collaborative interlibrary loan, collection development and acquisitions. *Interlending & Document Supply 31*(2): 138–141.

Anderson, Kristine J., Robert S. Freeman, Jean-Pierre V. M. Herubel, Lawrence J. Mykytiuk, Judith M. Nixon, and Suzanne M. Ward. 2002. Buy, don't borrow: Bibliographers' analysis of academic library collection development through interlibrary loan requests. *Collection Management 27*(3/4): 1–10.

Baker, Sharon L., and Karen L. Wallace. 2002. *The responsive public library: How to develop and market a winning collection*. 2nd ed. Englewood, CO: Libraries Unlimited.

Bombeld, Madeleine, and Arlene Hanerfeld. 2004. The surprising truth about faculty perception and use of collection development opportunities: One library's case study. *Against the Grain* (April): 18–22.

Bonn, George S. 1974. Evaluation of the collection. *Library Trends 22*(3): 265– 304.

Brug, Sandy, and Cristi MacWaters. 2004. Patron-driven purchasing from interlibrary loan requests. *Colorado Libraries 30*(3): 36–38.

Bulick, Stephen, Wiliam N. Sabor, and Roger Flynn. 1979. Circulation and in-house use of books. In *Use of library materials: The University of Pittsburgh study*, ed. Allen Kent, Jacob Cohen, K. Leon Montgomery, James G. Williams, Stephen

Bulick, Roger R. Flynn, William N. Sabor, and Una Mansfield, 9–55. New York, NY: Marcel Dekker.

Campbell, Sharon A. 2006. To buy or to borrow, that is the question. *Journal of Interlibrary Loan, Document Delivery & Electronic Reserve 16*(3): 35–39.

Chan, Gayle Rosemary Y. C. 2004. Purchase instead of borrow: An international perspective. *Journal of Interlibrary Loan, Document Delivery & Information Supply 14*(4): 23–37.

Cohen, Jacob. 1979. The economics of materials' use. In *Use of library materials: The University of Pittsburgh study*, ed. Allen Kent, Jacob Cohen, K. Leon Montgomery, James G. Williams, Stephen Bulick, Roger R. Flynn, William N. Sabor, and Una Mansfield, 105–159. New York, NY: Marcel Dekker, Inc.

Cohen, Jacob, and James R. Kern. 1979. The economics of materials' use: D. Towards a library decision model for book purchase. In *Use of library materials: The University of Pittsburgh study*, ed. Allen Kent, Jacob Cohen, K. Leon Montgomery, James G. Williams, Stephen Bulick, Roger R. Flynn, William N. Sabor, and Una Mansfield, 126–159. New York, NY: Marcel Dekker, Inc.

Comer, Alberta, and Elizabeth Lorenzen. 2006. Is purchase on demand a worthy model? Do patrons really know what they want? In *Charleston Conference Proceedings 2006*, ed. Beth R. Bernhardt, Tim Daniels, and Kim Steinle, 171–179. Charleston, SC: Libraries Unlimited.

Coopey, Barbara M., and Ann M. Snowman. 2006. ATG special report—ILL purchase express. *Against the Grain* (February): 46–49.

Davidson, John S. 1943. The use of books in a college library. *College & Research Libraries 4*(3): 294–297.

Eldredge, Jonathan D. 1998. The vital few meet the trivial many: Unexpected use patterns in a monographs collection. *Bulletin of the Medical Library Association 86*(4): 496–503.

Foss, Michelle. 2007. Books-on-demand pilot program: An innovative "patroncentric" approach to enhance the library collection. *Journal of Access Services 5*(1): 306–315.

Fussler, Herman H., and Julian L. Simon. 1969. *Patterns in the use of books in large research libraries*. Chicago: The University of Chicago Press.

Hardesty, Larry. 1981. Use of library materials at a small liberal arts college. *Library Research 3*(3): 261–282.

Houle, Louis. 2004. Convergence between interlibrary loan and acquisitions: A science and engineering library experience. Paper presented at Library Management in Changing Environment: Proceedings of the 25th annual IATUL Conference, The Library of Cracow University of Technology, Kraków, Poland, May 30–June 3, 2004. http://www.iatul.org/doclibrary/public/Conf_Proceedings/2004/Louis20Houle.pdf . Accessed July 8, 2009.

Mills, Terry R. 1982. *The University of Illinois film center collection use study*. Urbana, IL: University of Illinois, CAS Paper. (ERIC Document: ED227821).

Perdue, J., and J. Van Fleet. 1999. Borrow or buy? Cost-effective delivery of monographs. *Journal of Interlibrary Loan, Document Delivery & Information Supply 9*(4): 19–28.

Ruppel, Margie. 2006. Tying collection development's loose ends with interlibrary loan. *Collection Building 25*(3): 72–77.

Trueswell, Richard L. 1969. Some behavioral patterns of library users: The 80/20 rule. *Wilson Library Bulletin 43*(5): 458–461.

University of Nebraska-Lincoln Libraries. 2009a. Welcome. http://www.unl.edu/ libr/ about/. Accessed January 29, 2010.

———. 2009b. Statistics. http://www.unl.edu/libr/assessment/stats.shtml. Accessed February 5, 2010.

Vogt, W. Paul. 1999. *Dictionary of statistics and methodology: A nontechnical guide for the social science*, 2nd ed. Thousand Oaks, CA: Sage Publications, Inc.

Ward, Suzanne M. 2002. Books on demand: Just-in-time acquisitions. In *Out-of-print and special collection materials: Acquisition and purchasing options*, ed. Judith Overmier, 95–107. Simultaneously published in *The Acquisitions Librarian 14*(27): 95–107.

Ward, Suzanne M., Tanner Wray, and Karl E. Debus-López. 2003. Collection development based on patron requests: Collaboration between interlibrary loan and acquisitions. *Library Collections, Acquisitions, & Technical Services 27*(2): 203–213.

Way, Doug. 2009. The assessment of patron-initiated collection development via interlibrary loan at a comprehensive university. *Journal of Interlibrary Loan, Document Delivery & Electronic Reserve 19*(4): 299–308.

Zopfi-Jordan, David. 2008. Purchasing or borrowing: Making interlibrary loan decisions that enhance patron satisfaction. *Journal of Interlibrary Loan, Document Delivery & Electronic Reserve 18*(3): 387–394.

Appendix

Effective use value: As Cohen (1979) noted, data on usage become "most meaningful when combined with cost data" (105). In considering the term "effective use value" in this study, the reader should understand this to mean that the item(s) in question have a favorable (i.e., effective) ratio of cost(s) to use(s); e.g., Cohen's "total cost per item circulated ('average item cost')" or "cost per transaction ('average transaction cost')" (107–109).

Kruskal-Wallis test: This is a nonparametric test of statistical significance that is employed when testing two or more independent samples. It is a one-way analysis of variance (a type of statistical test that determines whether the means of several groups are all equal) for rank order data. (Vogt 1999, 151)

Percentage expected use (PEU): This metric is a "ratio of the percentage of use of a subject to its percentage holdings" (Mills 1982, 5) and is a modification of Bonn's use factor (see below); the modification was to multiply the use factor by 100 (7). The formula for calculating a topic's PEU is as follows: LC subclass' PEU = [(sub-

class' use/collection's use)/(subclass' number of items/number of items in the collection)] × 100 (to convert to a percentage).

Stock turnover rate: The rate was calculated as follows: stock turnover rate = total circulation of book X/(number of months book X was available/12).

Topical idiosyncrasy: By this expression, the authors mean that the subject of a book is of limited interest or perhaps even of interest solely to the individual who requested it.

Use factor: This term means the "ratio of use to holdings in specific subject classes" (Bonn 1974, 272) or the "[p]roportionate circulation statistics by subject class compiled over a definite period . . . compared with proportionate holdings statistics by subject class" (272–273).

Use value: The average ratios were calculated as follows: use-value = Σ prices paid for all books in a category or group/ Σ annual stock turnover for all books in a category or group. This calculation should be understood to produce a ratio of prices paid to rates of annual circulation.