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# A Study of Circulation Statistics of Books on Demand: A Decade of Patron-Driven Collection Development, Part 3

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**A Study of Circulation Statistics of Books on Demand:  
A Decade of Patron-Initiated Collection Development,  
Part 3**

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*The Purdue University Libraries was an early implementer of purchasing books requested through interlibrary loan rather than borrowing the requested books. The service, called Books on Demand, began in January 2000. An analysis of the requests at the end of the first two years of service indicated that these patron-selected books were more likely to have repeat circulations than the books acquired through normal collection development processes. When the program reached its tenth year, the authors analyzed and compared the books purchased through Books on Demand with all other purchased books during the same period. Findings indicate that books acquired through this user-initiated program have higher circulation rates than books acquired through the normal selection channels. The difference is quite large, a mean of 4.1 compared to a mean of 2.4, when the first ILL use is included as a circulation. Therefore the authors recommend libraries investigate a service of purchasing books requested via interlibrary loan as a complement to other collection development efforts.*

*KEYWORDS* patron-driven acquisitions (PDA), collection development, acquisitions, circulation statistics, interlibrary loan, user-initiated acquisitions, patron-initiated collection development, Books on Demand

## INTRODUCTION AND BACKGROUND

Do books purchased on the basis of patron interlibrary loan (ILL) requests circulate more than those purchased by normal collection development methods? Does the status of the requesting patron affect the future circulation of a book? Do books in some call number ranges circulate more than others? These are the research questions that have been on the minds of librarians since libraries started purchasing a substantial number of patron-requested titles.

The Purdue University Libraries implemented a patron-driven book selection service, called Books on Demand, in January 2000, buying – instead of borrowing – recently published English language scholarly books submitted as interlibrary loan requests by faculty, graduate students, and undergraduates. In 2002, several Purdue librarians analyzed about half the books purchased during the program's first two years and concluded that the Books on Demand program was a valuable complement to collection development activities and consistently added relevant scholarly titles to the collection. This conclusion was based on bibliographers' assessment of the appropriateness of the 800 titles. This study was repeated in 2009 and is published as a companion to this article.\*

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\* A follow-up of this 2002 study is published in this journal issue. (See Anderson et al. 2010)

However, another measure of the success of the Books on Demand program would be to compare circulation trends with those of books purchased by the normal collection development process. Circulation of a book is one measure of the importance of the book to the collection. Books that are never taken from the shelf, regardless of their inherent quality, are not useful to the collection. The goal of the collection development librarian is to select books that users will want to read. This is an art, not a science. There is no way to know in advance if a book will be checked out and read by a user. Therefore, another way of assessing the value to collection of the Books on Demand titles would be to compare their circulation records with books acquired through normal selection methods.

Although circulation data was not a focus of the earlier study, there was some indication that the Books on Demand titles added to the Humanities, Social Science, and Education Library and to the Management & Economics Library were potentially high circulators.

....Subsequent circulation figures show that 68% of the Books on Demand titles acquired during the project's first two years have circulated at least once after the initial use by the original ILL patron (42% have circulated more than once); in contrast, 36% of titles normally acquired during the same time period for the HSSE Library have circulated at least once (16% have circulated more than once). Figures for the Management Library are even more dramatic: all Books on Demand titles had at least one checkout, whereas only 48% of the books selected and purchased with library funds had circulated one or more times during the same two years." (Anderson et al. 2002)

In 2002, these indications of high circulation were viewed cautiously as it was very early in the service, and many books had not been on the shelf long enough for circulation trends to influence decision making on whether the program was successful. Also, patron-initiated requests are for a specific and immediate research need, so initially the books indicated higher circulation because each Books on Demand title started with one circulation. Would they continue to show higher circulation? If so, this would add to the support for the program as did the bibliographers assessment.

Books selected by librarians or via the approval plan are purchased with long term objectives; for the bibliographers' responsibility is to build a collection that meets the *current and future* needs of *all* students and researchers. The bibliographers select books identified by the approval vendor and from publishers' catalogs. They often develop relationships with faculty members so that they understand their research interests, and they often encourage faculty members to send them requests. All this takes professional time. Some librarians have suggested that time spent on collection development could be used in other services, if libraries simply ordered the books users request, either through interlibrary loan or through catalog records for print or electronic books that meet the libraries' subject profile. The argument is that the books requested by users circulate more than those selected by librarians, implying that patron requests are better selections and that simply purchasing their requests is a less labor intensive way to build a collection. Can libraries curtail their bibliographic responsibilities? A look at the circulation trends of Books on Demand titles would help librarians make this decision. It would also help guide the determination of what percentage of our book budget to allocate to the Books on Demand program.

## METHODOLOGY AND COMPILATION OF THE DATA

To investigate the circulation trends of the patron-initiated purchases, the books needed to be compared to a control group. The authors and titles for the Books on Demand program came from two sources: the Clio and ILLiad interlibrary loan systems. The circulation data came from the *Voyager* ILS system used by the Purdue Libraries since 1998. The technical problem was to match titles from the ILL systems with titles from the *Voyager* system; eventually all but fifty-two titles were matched. For comparison purposes another data set was collected for books purchased during the same time interval as the Books on Demand titles. These books were selected by librarians, obtained on approval plans, or arrived automatically as continuation orders. Gift books and reference books were excluded. Circulation data for both sets of books were obtained on September 14, 2009. For ease of reference, the authors refer to these as the Books on Demand data set and the Control data set.

The Books on Demand data set contains 9,327 titles. The data for each title include author, title, publisher, date of publication, date the book was received by ILL, date the book was cataloged, the Dewey call number, the status of the requestor, the academic department of the requestor, the name of the campus library to which the book was sent, and the number of circulations of the title between the date it was cataloged and September 14, 2009. In this study the number of circulations is further segmented according to the status of the user and whether the circulations were for two-hour reserve use or for normal circulation use. The categories for the status of the requestor and the status of the user are the same: faculty, graduate student, undergraduate student, and other. The status “other” is usually staff, but occasionally includes visiting faculty.

The Control data set contains 141,112 titles. Author, title, and publisher data were not collected for this data set since they were not used in the analysis. The data set does include the date the book was cataloged, the call number, and the number of circulations between that date and September 14, 2009. As in the Books on Demand data set, circulation for each Control book was also categorized by the status of the user and the type of circulation, i.e., two-hour reserve or home circulation.

Certain constraints and idiosyncrasies of the data need to be noted. It is impossible to avoid data errors in such large data sets. The authors periodically checked the data for errors and believe that the error rate is less than one-half of one percent. The first item is a definition of *a circulation*, clarifying what is included and when it was taken. A circulation was measured as a charge, not a discharge. The circulation numbers for the Control data set are limited to the number of charges since the date of cataloging. The Books on Demand data set also contains the same circulation data, e.g. the charge numbers since the date of cataloging, but in addition each Books on Demand title had one use as an ILL item before it was cataloged. In the tables and discussions, this study clearly states whether or not the ILL use is included in the circulation numbers. The circulation counts include both charges for normal use and charges for in-library two hour reserve use. Again, the discussion clearly identifies whether or not the results include the two hour reserve charges. The second item is *withdrawn books*. Books which were acquired in the time interval under study but which were withdrawn were not included since there is no circulation data for them. The third item is a *clarification of the time* covered by this study. The time interval established for both data sets was books acquired between January 2000 and December 2008. These books also had to have been cataloged between January 2000 and April 2009. To have comparable data sets, the Control data set time period matched the identical time

interval as the Books on Demand data set. The final issue is merging Dewey classification numbers for books with Library of Congress classification. In January 2009, the Purdue Libraries switched from the Dewey classification to the Library of Congress (LC) Classification schedule. Since the subject analysis is based on Dewey classification, the Dewey class number for those titles classed in LC was obtained from the MARC record. However, the MARC record did not always have a Dewey class; therefore, there are 17 titles in the Books on Demand data set and 173 in the Control data set without Dewey numbers, explaining why the total number of books in the tables does not match exactly.

## RESULTS OF THE COMPARISON

DO BOOK PURCHASES BASED ON PATRON REQUESTS CIRCULATE MORE THAN THOSE PURCHASED BY THE LIBRARIES' NORMAL COLLECTION DEVELOPMENT METHODS?

The first stage of the analysis looked simply at the total average circulations for Books on Demand titles after they were cataloged compared to the Control group of books purchased through normal procedures. The objective is to see how likely or unlikely it is for a book to be chosen by a user once it is on the shelves with other books on the subject. *Total average circulations* included all types of circulations: three week loans, sixteen week loans, short term loans and reserve book loans. The Books on Demand titles circulated an average of 3.323, while the Control group books circulated an average of 3.030. This first, preliminary statistic indicates that once the books are on the shelves, the Books on Demand books receive slightly more use than the normal books. Another way to visualize this statistic is to see that for every 10



circulations of Books on Demand titles there are nine circulations of the normal group.

However, this statistic includes two-hour reserve use, which is somewhat different from the normal circulation; reserve books are extensively used by a very small group of students for two hours or less because of specific assignments. One title from the Control data set had 1,375 two-hour reserve loans. Numbers like this can greatly influence the averages. *So the next question was whether reserve book circulation significantly affected the average circulation statistics.*

Without the reserve data included in the calculation, Books on Demand titles show higher circulation; they circulated slightly more than three times while normal books circulated slightly less than two and one half times. Table 1 compares the circulation statistics after each group of books was cataloged *both with and without reserve circulation data.*

Another interesting item that table 1 shows is that books purchased through the normal process are three times as likely to be placed on reserve as the Books on Demand titles are. This difference is not surprising, since books needed for reserve are purchased out of the normal library funds, while the Books on Demand titles are requested for an immediate research need. Normal selection methods are more successful for acquiring books needed to directly support undergraduate curriculum.

< insert TABLE 1 here >

HOW ARE THE STATISTICS AFFECTED WHEN THE ILL USE IS ADDED AS THE FIRST CIRCULATION COUNT?

Books on Demand titles have already had one circulation before cataloging. Table 2 includes the circulation rate both with and without that first circulation counted. These statistics do not include reserve circulation data. Adding the ILL use to the Books on Demand circulation statistics increases the books' average circulation to 4.114 compared to 2.410 for normal books. Once the data are adjusted by removing the reserve circulation and adding the ILL circulation, the Books on Demand titles circulate significantly more than normal books.

< insert TABLE 2 here >

#### WHAT PERCENTAGE OF THE BOOKS NEVER CIRCULATE *AFTER* THEY ARE ON THE SHELVES?

Many proponents of user-initiated collection development cite the high percentage of books purchased through normal selection methods that never circulate. These are the true shelf sitters; they may remain on the library shelves for years and never be moved unless the collection is shifted. The 1970's Pittsburgh study, for example, reported zero circulation for 39.8% of its collection after six years on the shelf (Bulick et al. 1979). With currently declining circulations, a rate of 50% would not be an unreasonable estimate for today's research collections. So the next probe was to determine the percentage of books acquired through Books on Demand that were shelf sitters, and compare this percentage with the percentage of Control books with no circulation. The Books on Demand titles show a lower rate of shelf sitters (18%) compared to the rate for regular books (33%). Table 3 indicates that overall the Books on Demand titles outperform the Control books.

< insert TABLE 3 here >

#### DOES THE HEAVIER USE OF BOOKS ON DEMAND TITLES INCLUDE ALL TYPES OF PATRONS?

In 2008/09, the number of faculty members at the West Lafayette Purdue campus was 3,038, while the number of graduate students was 7,427 (Purdue University). The combined group of faculty and graduate students is Purdue's researchers; so graduate students constitute 70% of the researchers. The undergraduate student count was 31,761. Table 4 shows both faculty and graduate student use the Books on Demand titles at about a 50% higher rate than the Control titles, even with the ILL use excluded. Undergraduates, on the other hand, used both the Books on Demand and the Control titles at about the same rate. Table 4 also shows that graduate students are certainly the heaviest users of both Books on Demand titles and the Control titles.

<insert TABLE 4 here>

#### DOES THE STATUS OF THE REQUESTING PATRON AFFECT THE FUTURE CIRCULATION OF A BOOK?

Books requested by undergraduates had the highest average circulation while those requested by faculty had the lowest average circulation. This conclusion is shown in the last column in table 5. It shows the average circulation of Books on Demand books based on the status of the patron who requested the book from ILL. The initial ILL use is not included in the average circulations, nor is the two hour reserve use.

The four columns to the left of the Total column show how frequently the various categories of borrowers used the books requested by the faculty, graduate students, and undergraduate students. The four columns show that faculty members are more likely to borrow books requested by faculty, and graduate students are more likely to borrow books requested by graduate students, etc. Not surprisingly, faculty made little use of books requested by undergraduates. On the other hand, although undergraduates are most likely to use books requested by undergraduates, they made as much use of faculty selections as they did of graduate student selections. Graduate students made the heaviest use of titles requested by every category of patron except undergraduates.

It could be argued that the results in table 5 are due to the fact that the patron who first charges the book after it is cataloged is the often same one who originally used it as an ILL loan. For that reason the authors removed the first circulation after ILL use and recalculated the averages. The results were very similar, especially for graduate and undergraduate students.

<insert TABLE 5 here>

#### DOES THE SUBJECT CLASSIFICATION OF THE REQUESTED BOOK AFFECT ITS CIRCULATION RATE?

Table 6 shows that the average circulation for Books on Demand titles requested by faculty shows little difference by Dewey class number. Those requested by graduate students and by undergraduates show more variability by Dewey number. By cross comparing the tables, it can be seen that average circulation for history titles (Dewey 900s) is about the same for each

category of patron. On the other hand, general titles (Dewey 000s) requested by graduate and undergraduate students had much higher circulation than did those requested by faculty.

The most significant finding of table 6 is that science and technology titles (Dewey 500s & 600s) had high mean circulation rates irrespective of which category of patron requested them. Science and technology titles requested by graduate and undergraduate students had slightly higher circulation than did those requested by the faculty. This fact is even more interesting to note realizing that the Books on Demand service is very heavily used by liberal arts patrons compared to science and technology patrons (82% of the Books on Demand titles fall into liberal arts call number ranges; only 13% fall into the science/technology ranges).

< insert TABLE 6 here >

## CONCLUSIONS

Books acquired through a program such as the Books on Demand service offered by the Purdue University Libraries Interlibrary Loan department have higher circulation rates than books acquired through the normal selection channels. The difference is quite large, 4.1 compared to 2.4, when the first ILL use is included as a circulation and reserve uses are excluded. The difference is smaller, 3.1 compared to 2.4, when the first use is not included. This result confirms the conclusions of the 2002 study of Purdue's Books on Demand service (Anderson et al. 2002).

From a practical standpoint these results mean that academic libraries are well advised to acquire recent English language books of a scholarly nature when they are requested through

ILL. This analysis of the subsequent circulation trends along with the bibliographers' analysis of the appropriateness of the books users request has lead to a continuation and expansion of the Books on Demand program at Purdue University. Over the past 10 years we have allocated about 5.5% of the book allocation. The librarians involved in this assessment are recommending an increase to 10% of the allocation. The next step beyond this practice would be the acquisition of patron-requested books which are not ILL requests. For example, the library could load records for print or electronic books into the OPAC that match the Libraries approval plan profile and then order the titles that patrons select. If the Purdue Libraries were to do this, one would expect the resulting mean circulation for a comparable time period to be between 3.1 and 4.1. Some books selected from the OPAC would be for immediate use, as in the ILL case; one would expect them to average around 4.1 circulations per book. Other books would not be for immediate use; one would expect their average to be about 3.1. Other academic libraries would no doubt have different upper and lower bounds. Moving to a patron-driven book selection model of this type does entail the possibility of declining returns to scale. This could happen if faculty selected large numbers of books from the OPAC to build the library collection rather than to acquire books they personally need. The average circulation of Books on Demand books selected by faculty was 2.6 after cataloging, i.e., less than the lower bound of 3.1. The acquisition of many books in this manner would lead to a decline in mean circulation.

For a program of patron selection to be successful for all users, it is important to have input from all constituencies on campus. At first glance, the data in this study seem to indicate that students make better selectors than faculty, since the circulation rates for books requested by graduate and undergraduate students are higher than the rates for books requested by members of the faculty. Graduate students are the heaviest users of monographs and the heaviest users of the

Books on Demand service, and their selections have some appeal to both undergraduates and faculty. It is important to note that this study also shows that faculty are the most frequent users of books requested by faculty and they make only minor use of the books requested by graduate and undergraduate students. Therefore, it appears that the reading needs of faculty can best be determined by other faculty.

There does seem to be some variation in circulation rates of patron-requested books based on subject matter. There is further variation when one takes into account whether it is students or faculty members who requested the books in the various subjects. In a collection development policy it might be difficult to even out these differences; it may, in fact, not even be desirable. Other factors, such as major strengths of the academic institution in teaching and research, might actually favor disparities of this nature. Knowledge of this type, however, does give the collection development team one more tool for crafting a good collection policy.

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