E-Book versus Print
A Per-Title Cost and Use Comparison of a Public Library's Popular Titles

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Electronic books, or e-books, are a major topic of discussion for public libraries across the country. Two-thirds of public libraries report they now provide access to e-books. However, limited research exists on e-books in public libraries. This study examines e-book usage and cost in a public library by comparing the most popular electronic format to print format by title to discover if e-book and print copies of the same title circulate at similar rates. The title for title, print book and e-book comparison showed that on average the highest circulating e-books circulated at the same rate as the first print copy. A cost comparison found comparable average prices of popular book titles in both print and electronic format as well as the cost per circulation of print and e-books.

Electronic books, or e-books, are a major topic of discussion for public libraries across the country. E-books have been around since the 1970s when Project Gutenberg was started, but until recently there has been a lack of quality devices on which to read the material. E-book readers have improved, and e-books have reached mainstream adoption due to products such as the Amazon Kindle, which has more than 390,000 titles available.

Strong demand from public library users for technologies such as the iPhone, iPad, Nook, and Kindle are challenging public libraries to dramatically improve their virtual offerings or risk losing relevance in this area.[1] Research on format usage, preference, and cost benefits may prove helpful to those librarians considering offering e-books to their users for the first time or for those analyzing their existing collections and services.

Library Journal's Book Buying Survey (2011) provides an overview of access to e-books in public libraries. Two-thirds of the public libraries responding to the survey offer an e-book service, and all public libraries that serve a population of over five hundred thousand reported offering e-books. On average, e-book circulation increased by 52 percent, with 90 percent of the survey respondents reporting increases.[2]

The Institute of Museum and Library Service's report *Public Libraries in the United States: Fiscal Year 2005 through 2008* shows double-digit growth in e-book collections. E-book collections in public libraries grew from 8.9 million in fiscal year 2005 to over 13.9 million in fiscal year 2010, an increase of nearly 36 percent. The size of print collections has fluctuated during this time period, but e-books, databases, audio, and video collections have seen consistent growth.[3]

These reports have shown substantial growth in e-book circulation and collection size. They show comparisons of print and e-book circulation by subject and report the amount of money public libraries spend each year on electronic materials. These expenditure reports make it difficult to determine the amount of funds allocated only to e-books as funding for all electronic materials are grouped together.

Our study looked specifically at e-book costs relative to use and to print title usage by comparing the top circulating titles that have both print book and e-book formats. The book collection of a mid-sized public library in the mid-western United States was used for the analysis. This library uses one of the most popular e-book delivery systems, OverDrive. A usage comparison combined with a cost analysis provides one way to examine how effectively funds were spent on each format.

LITERATURE REVIEW

Comparison of E-book and Print Usage Rates

Limited research exists on e-book usage rates in public libraries; however, studies have examined public library users' reactions to using e-book reading devices.[4] A majority of the research related to e-books is from academic libraries. Many studies are available on collection development, usage trends, format preference, usability, and advantages and disadvantages of e-books in an academic library setting. Of the studies that have been done on usage trends, many have concentrated on academic journals, with only a few focusing on e-books.

A study at Louisiana State University (LSU) identified over 2,800 print titles with e-book equivalents in its catalog. Usage statistics were collected monthly for a year on both formats and overall totals analyzed at the conclusion of the data collection period.[5] These researchers found that the books in print circulated at a higher rate—29.27 percent compared to 19.60 percent of the same title in an e-book format. Like the LSU study, our study involves a title for title comparison of print books versus e-books but in the context of a public library and only with selected titles rather than all titles shared between both print and electronic formats.

Research conducted at the College of Mount St. Joesph's Archbishop Alter Library examined undergraduates' usage attitudes toward e-books. They studied students from the millennial generation, defined as those born after 1981: 66 percent of the students preferred a print book to an electronic one.[6] This is a surprising finding considering this generation grew up in a digital culture. Similarly, a University of Denver study found that the majority of the study participants, 60 percent, preferred print titles over electronic ones and particularly so when they intended to read the entirety of the book. However, 80 percent of the participants used both formats.[7] Research is lacking on public library users' attitudes towards e-books. While our study does not specifically examine user attitudes or format preferences, it does examine the extent to which e-books are sought after compared to print formats.

In regard to the previously mentioned studies, one study found that print titles circulated at a greater rate than e-book equivalents, and two other studies found that academic library users preferred print to electronic formats. Most other studies have found that e-book titles circulate at the same rate or a much greater rate than the print versions of the same titles. When researchers at the California State University (CSU) Libraries compared the usage of the same titles in their e-book and the print collections, they found usage rates to be nearly similar.[8] Their findings indicate that if titles are available in both formats, both will be used. Our current study also examined the levels of use between the two formats.

The following four studies discussed found e-books to circulate or to be accessed at a greater rate than the print books by the same title. Our study compared total circulations, as well as turnover rates, to examine which format had a greater rate of usage.

A study conducted at Columbia University from 1995 to 1999 found that e-book copies of a title also held in print were accessed three times as often as the print copies.[9] A study at the University of Pittsburgh found that e-book versions circulated more than twice as often as the print and that a greater percentage of the e-book collection circulated than did the print, given the same titles.[10]

Littman and Connaway (2004) conducted a study at the Duke University Library comparing the usage of 7,880 titles held both in print and e-book format.[11] The study found that more titles were only used in the e-book format (34 percent of study titles) than used only in the print format (27 percent). Also, their study found that most titles were used in both formats at 39 percent. Similar to the CSU Libraries e-book study, Littman and Connaway found that the same title available in print and electronic formats were both used. Additionally, their study compared circulation rates of print books before and after the introduction of e-books. They found that print circulation declined by 22 percent, but overall circulation increased by 5.2 percent.

Like the previously mentioned use studies, the study presented here compares circulation rates for the same title in both print and electronic formats. This study differs in that the comparison is made of popular not scholarly works, a smaller number of book titles, and in the setting of a public library rather than an academic one. As this study is the first to compare e-book to print usage of public library collections, it is exploratory in nature and serves only as a start to understanding the use of e-books to meet information needs of public library users.

Consortium Based Collections

It is important to note that some libraries are a part of a consortium and share an e-book collection. As a result, titles are selected and added to the collection by the other member libraries in the consortium. While cooperative agreements aim to save libraries money, studies have shown that locally selected collections of e-books receive greater usage than

collections that are developed through a consortium.[12] The public library used in this study does not participate in a consortium for access to e-books; all selection is done locally. In this way, both the e-book and print collections are both developed with the same community in mind.

Use Limitations of E-books

Important to any discussion of circulation rates of e-book titles is the publishing industry. At the beginning of 2011, publisher HarperCollins instituted a checkout limit for their new titles licensed from e-book vendors. A new HarperCollins title may only circulate twenty-six times. After the title circulates twenty-six times the license expires, and the title must be purchased again if a library would like to continue to make it available.

HarperCollins representatives say the limit was determined after considering a number of factors, including the average lifespan of a print book, and the wear and tear on circulating copies.[13] The new terms are not limited to OverDrive and apply to all e-book vendors or distributors offering the publisher's titles for library lending. No other publishers have implemented a limit. However, it should be noted that publishers Macmillan and Simon and Schuster still do not allow e-books to be circulated in libraries.

RESEARCH QUESTIONS

Public library users are increasingly seeking access to e-books and e-readers from their public libraries. This study seeks to understand the extent of this interest as measured by the comparison of circulation rates of e-book and print copies of the same title. Further, a cost comparison was conducted to determine the average cost of each title for each format and a comparison of costs per circulation.

RQ 1. Do e-book and print copies of the same title circulate at similar rates?

RQ 2. What is the average price of popular book titles for both print and e-copies?

RQ 3. What is the cost per circulation of print and e-books?

METHODS

This study provides an exploratory analysis of e-book usage in a mid-sized suburban public library. The library chosen for this study was selected because of its size and ease of access to data related to circulation and budget. This library is a county-wide system that serves just over seventy thousand people and includes a main library, one branch location, and a bookmobile. The library uses OverDrive as their only vendor for e-books and downloadable audiobooks.

The library is not part of a consortium, and all books are only available for patrons of this library system. The

OverDrive system was launched at the library in April of 2010 and had been in place for a total of fifteen months at the time the data were collected for this study. Circulation data were examined for the entire fifteen-month period, with data collection occurring during the week of June 14 to June 21, 2011. At that time, the library's e-book collection had a total of 398 titles available.

For this study, the top fifty e-books were chosen based on circulation statistics. All fifty titles were held by the library in print as well. Rather than using a random sample of titles, the highest circulating e-books were selected in order to use popular titles in the comparison. Given that the library holds many more popular titles in print than it does in the e-book format, it became the best way to identify popular titles held in both print and electronic formats. Once the highest circulating e-book titles were identified, a cross check was made on each title to determine if any of the print titles were available before the OverDrive system had launched in April of 2010. This was done to ensure that both formats were available for checkout the same length of time.

A total of thirty-four book titles remained to be compared. Next, circulation rates were recorded for each of the thirty-four book titles in both formats. Data gathered included total number of checkouts, total number of holds placed, and the price paid for the book. No duplicate copies of e-books were available and currently no policy exists to increase e-book copies of a title if holds on that title reach a certain threshold, as is the case for print copies.

Also, it was noted if print copies were lost, damaged, missing, or in large print. Another category of data only collected for print copies was fees paid for leasing additional copies of popular print titles. To determine the average cost of a leased copy, the total amount paid for leasing was divided by the number of leased books provided by the vendor.

Limitations

Study limitations include the relatively short amount of time OverDrive has been available to library users (fifteen months) when compared to print title availability. Library users are likely to be more aware of and accustomed to checking out books in print formats. Also, the inclusion of lease books, which are more expensive than purchased titles, slightly advantages e-books when comparing pricing between formats. Another limitation is the difference in loan period for the two formats. Print books are loaned for three weeks and e-books for only two weeks. This difference could provide a slight advantage to e-books in terms of turnover rates but could also disadvantage use rates as users may prefer a longer loan period regardless of format.

Determining an exact overall cost of either format is difficult because of costs related to storage, staffing, cataloging, processing, shelving, licensing, and other resources involved with getting materials into the hands of a library user in any format. Costs associated to overdue, lost, damaged, and missing print material are not comparable to e-books which

Table 1. Circulation Rates for E-book and Print of the Same Title

Title	E-books	First Print	Total Print
Sh*t My Dad Says	24	4	30
Breathless	20	15	73
Private	20	13	165
The Girl Who Kicked the Hornet's Nest	19	24	76
Every Last One	19	21	64
The Search	18	14	14
The Bride Collector	18	26	46
Chelsea Chelsea Bang Bang	18	14	50
9th Judgment	18	6	167
The Postmistress	18	18	31
Deception	18	14	65
61 Hours	17	11	69
Fantasy in Death	17	11	87
Hannah's List	17	28	93
The Confession	17	10	113
Dead in the Family	16	24	64
Death's Excellent Vacation	16	8	44
The Passage	16	8	41
Dangerous	16	27	77
Family Ties	16	26	96
Broken	16	18	60
Bad Blood	14	17	69
Decision Points	13	8	57
Cure	12	11	76
The Valcourt Heiress	12	18	53
Change Your Brain, Change Your Body	12	7	32
Veil of Night	12	19	84
Family Affair	12	15	52
Blockade Billy	11	22	27
The Double Comfort Safari Club	11	18	28
Committed	11	14	52
Fall of Giants	11	9	55
A Secret Affair	11	17	75
This Is Why You're Fat	10	18	27
Totals	**526**	**533**	**2212**

Table 2. Average Circulation Per Copy for Both Formats

	No. of Copies	Total Circ.	Ave. Circ. per Copy
E-book	34	526	15.5
Print	155	2212	14.3

Lastly, study findings will not be generalizable to the greater population of both libraries and public library users as this sample is small and based only on one library system. However, the study provides insight into the costs and usage of the same title purchased in both print and electronic formats in a public library setting.

FINDINGS

Comparison of Circulation Rates

An overview and comparison of the circulation rates are presented in table 1. Included in the overview is the total number of checkouts for the each of the thirty-four e-books as well as each print copy of the same title. As expected, given the multiple copies of the print format, print copies generated more circulation. However, on average the e-books circulated 15.5 times and the average for the print copies was 14.3 times (see table 2). Furthermore, the e-book circulated at an almost identical rate to the first print copy in circulation. The first print copies circulated a total of 533 compared to the total circulation of e-books at 526.

After a closer look, the first print copy did not always have the highest checkout total. These totals show a different story. The highest circulated print copies totaled 677 as compared to the 533 of the e-books. However, the data shows that seven of the e-book titles circulated at least as well as or better than the highest circulating print copy, and a total of seven e-book titles circulated more times than any of the print copies of the same title. Given this study sample, approximately 20 percent of the highest circulating e-books circulated at the same level or better than the highest circulating print copy of the same title. Further, sixteen of the e-books had more than five holds, which is the threshold for purchasing or leasing an additional print copy. If the same threshold applied to e-books as for print, an additional twenty-two e-book copies would have been purchased.

As previously mentioned, HarperCollins instituted a maximum number of circulations for each e-book title they sell. Once an e-book title from this publisher reaches twenty-six checkouts, the title must be repurchased at a discounted

cannot become overdue or lost. Further, the library pays $1.50 for a preprocessing fee for each print book. Although there are no physical processing or storage costs associated with e-books, there is an annual site fee payable to Over-Drive. The aforementioned factors were not considered in the average price of the books in this study. The comparison of the environments that support both of these formats is an important area of study but beyond the scope of this study.

Table 3. Average Cost of Book by Format and Type

Purchased Print	$15.68
Purchased and Leased Print Combined	$16.74
Purchased e-book	$17.80
Leased Print	$18.33

price. No e-book titles reached this many checkouts but interestingly several print copies did. A total of seven print copies exceeded the twenty-six circulations threshold and eighteen titles were in the range of twenty to twenty-five and likely to exceed the twenty-six circulations mark. Also of note is that of the 155 print books in the study, only three books were either lost, damaged, or went missing.

Cost Comparisons: Average Copy and Per Circulation

Using the actual price the library paid for the books with other factors included in that cost, the average purchase price for thirty-four e-books was $17.80, and the average for print copies was $15.68. Using the annual cost of the library's lease program divided by the total number of books leased within a year gives an average of $18.33 per lease copy. Table 3 indicates that on average the print copy is less expensive than the e-book copy; however, the e-book copy is less expensive than a leased print copy. Print copies are still less expensive than the e-book copies when including the sixty-two leased copies in the average price paid for the print books.

Interestingly, the average cost per circulation of e-books, $1.15, is less expensive when both purchased and leased print circulation rates are combined, $1.17. Table 4 provides the cost per circulation for comparison. Purchased print books have the best return on investment at $1.11 per circulation.

DISCUSSION

Counter to most of the findings in the academic library studies, demand for print copies outpaced demand for e-book copies. In a direct comparison of circulation counts, print copies circulated four times as much as the e-book copies in this study. However, one must consider that there was more than four times the number of print copies available to be checked out.

It should be noted that multiple print copies are purchased relevant to the number of holds place on a title: generally for every five holds placed on a title an additional copy is purchased to satisfy demands. As mentioned earlier, if the same policy existed for e-books as for print, an additional twenty-two e-book copies would have been purchased to satisfy demand for thirty-four titles in the study. Using holds

Table 4. Average Cost Per Circulation by Format and Type

	No. of Copies	Circ.	Ave. Cost per Circ.
Purchased Print	93	1313	$1.11
Purchased E-book	34	526	$1.15
Purchased and Leased Print Combined	155	2212	$1.17
Leased Print	62	899	$1.26

placed as a measure of demand, print copies were requested at a rate of 122 versus 56 for e-books. As a result of this study, beginning in July 2011, a 4:1 holds ratio was implemented for e-book titles. Once an e-book title reaches four holds, an additional copy will be purchased. Interestingly, the turnover rate for e-book copies was slightly higher than for the print, 15.5 circulations compared to 14.3.

Unlike the previously mentioned studies, our study compared e-books to print circulation rates in which only multiple copies existed for the print titles. Public libraries are expected to fill user demands for popular leisure reading materials, and to do this multiple copies of the same title are purchased or leased. Most public libraries practiced purchasing that same title in multiple formats, for example, large print and audio file.[14] This is not a practice in academic libraries. In developing collections, public librarians have to not only consider what titles to purchase but also how many and in what formats. Like the CSU Libraries and Duke University Library studies, our study showed that certain titles are desired in both print and electronic formats. Public library users will likely expect e-book copies of popular titles to become another available format.

Because public libraries have to meet user expectation of ready access to the most popular titles, publishers can count on them to purchase multiple copies and multiple formats of these titles. As a result, public libraries are buying the same content in as many as five formats and tens of copies. While the study sample is small, the findings do not support HarperCollins assertion that print copies wear out or are lost by twenty-six circulations. Studies like this one can help libraries to better understand what is fair in terms of publisher demands as they try to meet users' expectations.

The previous e-book print comparison studies do not compare costs, likely for the reasons mentioned in the limitations section. The cost per circulation of an e-book was slightly less than the overall cost, purchased and leased combined, for the print copies, $1.15 compared to $1.17. Additionally, the per circulation as well as the average item cost of the e-books is less than the leased books, $1.15 compared to $1.26 and $17.80 and $18.33 respectively. As e-reader usage spreads through the population of public library users, e-books may become a more cost effective and time efficient means of keeping up with user demand for popular titles.

CONCLUSION

This type of analysis provides insight into format usage that is helpful to librarians in evaluating collections and determining how best to allocate resources, including time, money, and space. The title for title print book and e-book comparison showed that on average the highest circulating e-books circulated at the same rate as the first print copy. Hold counts for certain e-book titles showed the need for additional e-book copies to be purchased. A per copy overview like the one included in this article illustrates the need to consider purchasing additional e-book copies rather than print copies to fill user demand for certain titles.

The comparison studies conducted in academic libraries are useful in that they illuminate an overall trend towards a preference for the e-book format. Further studies are needed specific to public libraries as for the most part, academic and public libraries collect different types of books and serve a different constituency of users. While our study demonstrates that e-book copies of popular titles are a valued resource for this one library system, larger studies are needed to understand the full impact of e-book collections on public library collections and users expectations of public libraries.

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