Assessing the Value of Ebooks to Academic Libraries and Users

By

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Abstract

In 2010, the University of Illinois at Urbana-Champaign (UIUC) Library agreed to take part in a global study of Elsevier electronic books (ebooks) sponsored by Elsevier Publishing. Ultimately, 129 UIUC faculty and graduate students participated in a logbook study that examined the ebook discovery process, detailed the way in which this group of researchers used ebooks, and queried users on the value they assigned to Elsevier ebooks. Going beyond the Elsevier survey, this study examines the value of ebooks both to UIUC users and to libraries, and it reports on an assessment of the ebook collection at UIUC including cost and use statistics. The results show that UIUC users assigned a high value to Elsevier ebooks for research purposes; this paper also determines that, in the broadest sense and as a collective format, ebooks offer libraries a better economic value than print books (pbooks) when comparing the cost of activities such as processing, circulation, storage and preservation.

Introduction

The opportunity to participate in an ebook study conducted by Elsevier Publishing was offered to the UIUC Library, among other universities in the United States and around the world, in 2010. Because the study intended to look at not only ebook users' activities but also their perceived value of ebooks, the UIUC Library was immediately interested: value assessment was also the goal of another opportunity, our participation in the IMLS Lib-Value Grant (http://libvalue.cci.utk.edu/). The UIUC Library determined that data from the ebook study (solely that of UIUC participants) could be separately analyzed to determine our users' assessment and use of the Elsevier suite of ebooks.

This study's focus is on value, and it adds to the mounting evidence supporting ebook implementation and acceptance. Why should libraries be interested in measuring value, particularly ebook value? Will knowing even the ballpark value of an ebook collection result in a change in library collections concerning ebooks? Simply put, yes. If ebooks are acknowledged to provide value to both users and libraries, it is likely to affect how libraries build monograph collections now and in the future.

What is value? For the purposes of this research, ebook value is defined as the benefit someone receives through the purchase by the library of an ebook or a collection of ebooks. The purchase is not enough of course; the ebook must be accessible by the library's patron base and stable for single or multiple users over time. It must reside on a virtual shelf, available for access and use. According to dictionary.com, there are three different connotations to "value." They are:

- To calculate or reckon the monetary value of; give a specified material or financial value to; assess.
- To consider with respect to worth, excellence, usefulness, or importance.
- To regard or esteem highly.

This study applied these three types of value assessment to ebooks at UIUC. Monetary value and "usefulness" were based on cost, use and cost-per-use data for ebooks at UIUC from FY2008-FY2011; "esteem" was measured using data from the Elsevier ebook study which asked users to rank the value they associated with the use of ebooks on the Elsevier platform (ScienceDirect).

The Value of Ebooks to Libraries

Previous Research

Libraries are very aware of the cost of doing business. Numerous articles have been written and research has been conducted to determine what libraries cost; a seminal work in this area, a study of the cost of owning and maintain library collections, was conducted by Lawrence, Connaway and Brigham in 2001 (Lawrence et al, 2001). The authors found that not only are life cycle costs for library collections many more times the purchase costs of materials, but that library long-term costs are largely driven by their monograph collections. They conclude that "if research libraries want to control their costs, they must work to control the life cycle costs of maintaining their monograph collections" (Lawrence et al, p. 549). Although written in 2001, before the most recent surge in ebook purchasing in libraries, the authors do note that ebooks may be one way to control library costs, therefore creating a better value for libraries. They also note that the

cost of electronic access and storage has been in decline over time, meaning costs are not only difficult to estimate, but may also be reduced in the future.

A follow-up study conducted in 2002 by Lawrence and Connaway (Lawrence and Connaway, 2003) explored library costs associated with paper and digital resources. Eleven librarians affiliated with the Association of Research Libraries (ARL) were asked to allocate resources to both an all-print and an all-digital hypothetical library. Participants were given a list of 43 tasks associated with seven major categories: selection, acquisition, cataloging, maintenance, circulation, warehousing/storage and deselection. Further compartmentalized to four major resource allocation areas (labor, space, materials and equipment), the authors found that, as a mean forecast, librarians predicted that labor costs will be less in a digital environment (a mean forecast of 59% of print costs), space costs will be less (a mean forecast of 29.2% of print costs), materials costs will be lower (a mean forecast of 34.2% of print costs) and finally that equipment costs will be lower (a mean forecast of 69.6% of print costs). This study ultimately found that "labor, aggregate space requirements, and material resources are estimated to be less in an all-digital library than in a paper library" (from Conclusions section). There is economic value to be found in moving from a paper-based monograph collection to a digital-based monograph collection.

In the most recent study available to date, Courant and Nielsen took on the task of updating the storage cost model for libraries (Courant and Nielsen, 2010). They conclude that "the costs associated with a print-based world, often assumed to be small, are actually large." Citing the successful migration journals have made from solely print to mostly electronic, the authors find parallel arguments can be made for moving from pbooks to ebooks.

Other costs that must be evaluated to determine the cost-effectiveness potential for ebooks and pbooks include staffing, circulation, preservation and storage. Table 1 duplicates Courant and Nielsen's Table 3 (pg. 101) and shows, in relative terms, how ebooks compare to pbooks in these areas. This table shows that there are long- and short-term savings to be had by purchasing ebooks rather than pbooks.

Table 1. "Comparison of per-object cost of print versus electronic storage (relative to print cost)" from Courant and Nielsen (p. 101), 2010.

Cost Element	Print	Electronic
Space	High	Much Less
Cleaning	Low	Much Less
Maintenance	Medium	Much Less
Electricity / climate control	Low	Somewhat Less
Staffing	Low	Somewhat Less
Circulation / Access	Low	Much Less

UIUC Library Quantitative Ebook Results

Data were collected to measure the size, cost and use of the UIUC ebook collection. Thanks to the efforts of acquisitions, e-resources and cataloging staff, data were available from fiscal years 2008 to 2011. As shown in Table 2, the UIUC Library currently has access to over 600,000 ebooks. The data were based on Voyager acquisition module coding, and while not considered absolutely precise, they do provide a ball-park sense of the size of the ebook collection and its growth over time.

Table 3 shows approximate cost and cost-per-ebook for fiscal years 2008-2011. These data reflect the large packaged collections the UIUC library has purchased over the past few years, leading to very low costs-per-ebook.

Table 2. Number of ebooks added to the UIUC library collection by fiscal year, 2008-11.

Fiscal Year	#Ebooks Added Per Year*	Cumulative Ebook Total	Percent Increase Per Year
2007		292,002	NA
2008	27,531	345,186	9%
2009	66,178	411,364	19%
2010	73,404	484,768	18%
2011	129,435	614,203	27%

*Counts are per volume, not per title

Table 3. Cost of ebooks purchased and cost-per-ebook by fiscal year, 2008-11.

Fiscal Year	$ Spent	#New Ebooks	$ per Ebook
2008	$224,047	27,531	$8.14
2009	$204,678	66,178	$3.09
2010	$383,167	73,404	$5.22
2011	$732,725	129,435	$5.66

Ebook use data were also collected by using COUNTER statistics provided by ebook publishers. For the purpose of this study, a "use" of an ebook was counted when a user successfully viewed or downloaded a section (generally by chapter) of an ebook through the vendor's portal. This definition of use follows COUNTER Book Report 2 (Number of Successful Section Requests by Month and Title) for most vendors. Of the vendors for which we could get information, 75% used COUNTER-compliant statistics; however, only 82% (33 of 40) of ebook publishers were able to provide use data, resulting in an undercounting of ebook use.

Table 4. Cost and use data for UIUC library ebooks, FY 2008-2011.

Fiscal Year	#Ebooks (Cumulative)	Amount Spent	#Ebooks Added from Previous Year	Avg. $ per new Ebook	Total Uses	Cost Per Use
2007	292,002	$185,991				
2008	345,186	$224,047	27,531	$8.14	151,089	$1.48
2009	411,364	$204,678	66,178	$3.09	251,273	$0.81
2010	484,768	$383,167	73,404	$5.22	563,871	$0.68
2011	614,203	$732,725	129,435	$5.66	709,944	$1.05

Table 4 shows the cost, use and cost-per-use for UIUC ebooks from FY08 to FY11. While the cost-per-use fluctuates between $1.48 and $.68, both are low and highlight the exceptional cost effectiveness this collection provides to UIUC users. There is, however, a large portion of the ebook collection that is not used, or not yet used. Figure 1 shows collection use and non-use for four of UIUC's top ebook publishers (by holdings and use: Elsevier, Springer, Wiley and Royal Society of Chemistry). These data show that while the collection is growing in terms of percentage of ebooks used (from 20.2% used in FY2008 to 36.9% used in FY2011), there remains a large portion of the collection that was not used during the study periods. However, this is also true of our print collections.

Figure 1. Percentage of ebooks used and unused during the study period based on four of UIUC's "top" ebook publishers (by holdings and use: Elsevier, Springer, Wiley and Royal Society of Chemistry).

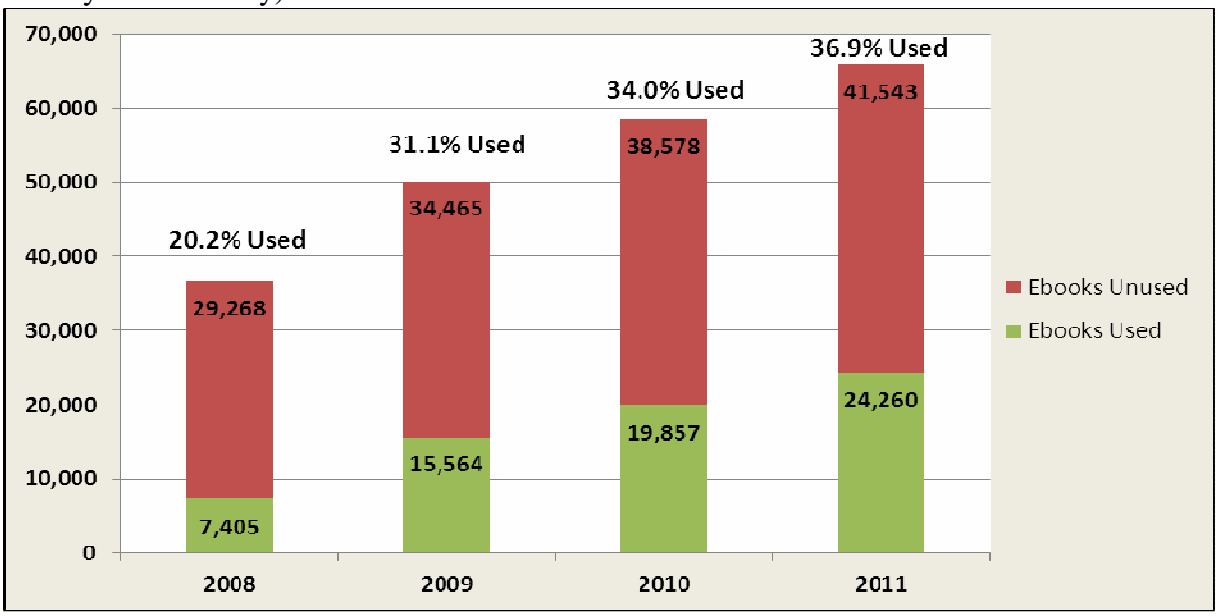


Figure 2. Average number of uses per ebook per year for four publishers: Elsevier, Springer, Wiley and Royal Society of Chemistry.

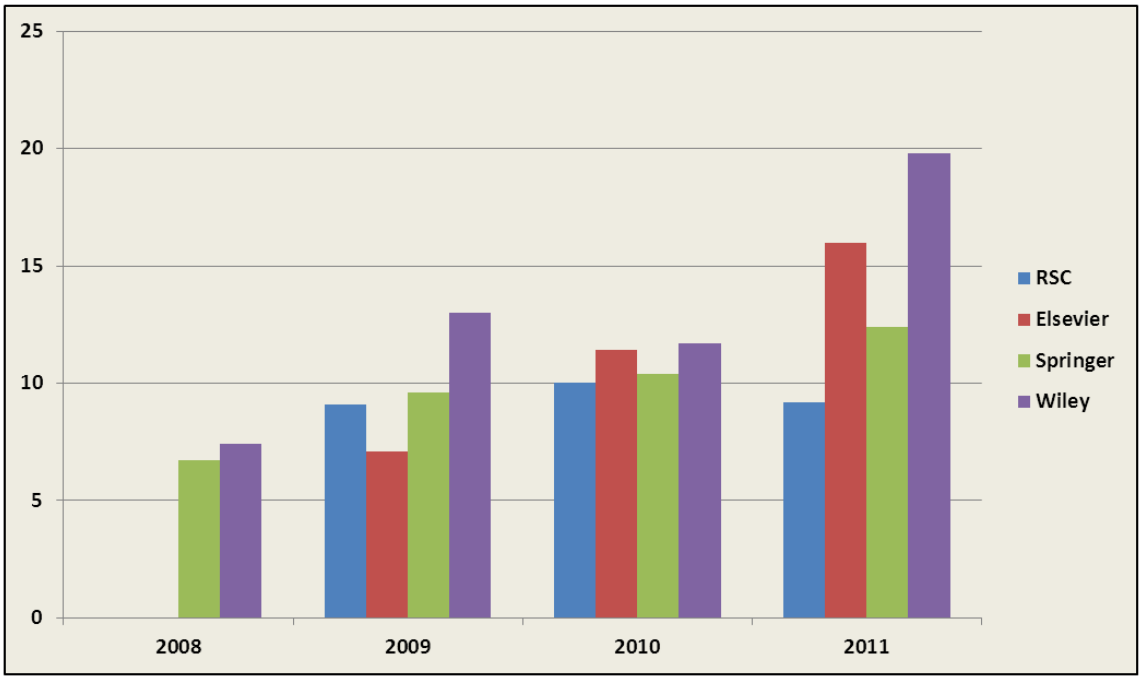
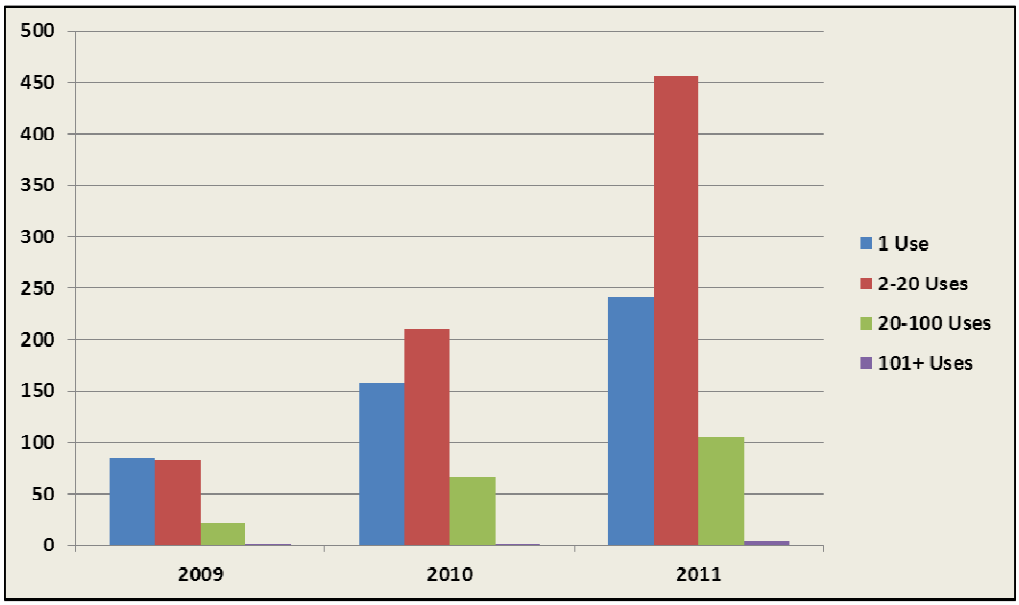


Figure 2 shows the average number of uses per ebook per fiscal year for the Royal Society of Chemistry, Elsevier, Springer and Wiley ebook collections held at UIUC. These four publishers' total downloads represent 49% of total uses for ebooks at UIUC in 2011and 11% of total ebook holdings; these are four of the "top" (by holdings and by use) ebook publishers at UIUC. These data help to confirm that ebooks are not used like print books (mostly due to their accessibility) and more closely resemble online serials, meaning that they can and do garner multiple uses while print books are often checked out by one user and made inaccessible to others. However, COUNTER ebook use data do not show if use represents the same person returning repeatedly to one source, or many different users using the source. Figure 2 represents averages, meaning that there are some very high- (and low-)use ebooks in our collections. For example, Figure 3 shows frequency of ebooks use for the Royal Society of Chemistry ebook collection as UIUC (numbering over 800 titles). The data show that the ebook "Food Flavors and Chemistry" was accessed 317 times in 2011, and in other years ebooks from this and other collections are often used hundreds of times in one fiscal year. Only reserve books in print could match this use level, and in fact most ebooks are on "permanent reserve" since they are nearly always there for the next patron to access.

Figure 3. Ebook use by frequency for the Royal Society of Chemistry ebook collection at UIUC.



The UIUC ebook data show that ebooks in our 600,000-plus collection are growing in popularity (even as we add more titles), have a low cost-per-book and a cost-effective, low cost-per-use. In addition, they offer greater accessibility to users (24/7 anywhere), greater availability to users and can provide our users with a broader, more diverse collection due to low-cost package purchases. As a result of licensing that permits multiple users, buying ebooks often means no need to purchase multiple copies since one copy is accessible to all users.

Taken altogether, a good case can be made from the library's perspective to continue to invest in ebooks and make them accessible. But of course this is not as simple as choosing a book format based on the financial value to libraries. Libraries have long been trusted to do the right thing, anticipate needs, and cover both "just in time" and "just in case" scenarios. Libraries have not often made decisions based on economic value but rather on the public good. Each book format has associated costs, and while the data do show that ebooks may provide a value incentive for libraries, the most important question is, do our users value ebooks? Do they serve the public good? The recent Elsevier study on the value of ebooks to users helps to answer that question.

The Value of Ebooks to Users

Background of the Study

The University of Illinois at Urbana-Champaign Library (UIUC) was invited by Elsevier Publishing in 2010 to participate in a global study of ebook use and value. The Elsevier research plan included user interviews, pre-surveys and a series of ebook searches and retrievals on the Elsevier platform, which was followed by a logbook questionnaire and follow-up survey. Researchers from UIUC participated by taking the pre-logbook questionnaire, using the ebook platform, finding and using Elsevier ebooks, reporting on their experiences in logbook diaries and completing the final survey. This study centers only on responses from UIUC faculty and graduate students.

Previous Research

Ebook studies in libraries are substantial in number and cover a wide range of methodologies, vendors, and types of libraries. Spiro and Henry offer an extensive review of the ebook literature

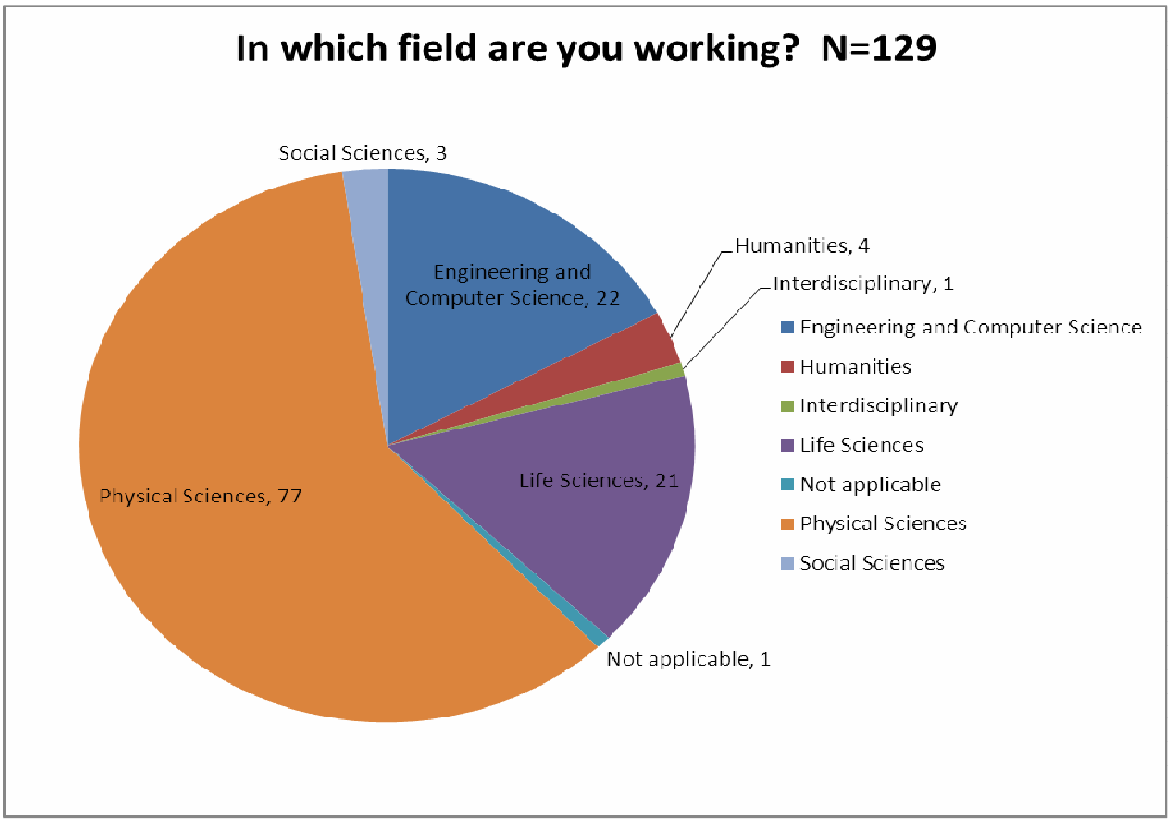
to date (Spiro and Henry, 2010). Studies that examine ebook value, however, are few. Shelburne (2009) measured ebook usage at the University of Illinois at Urbana-Champaign and, among other questions, asked users to estimate the "usefulness" of ebooks; 85% of users (from over 1500 respondents) believed the ebooks they used were "useful;" 75% of faculty found ebooks useful and 86% of graduate students found their ebook experience to be useful. While this may not correlate directly to the concept of value, it does show a very high percentage of satisfied ebook users who are also UIUC faculty and graduate students (Shelburne, 2009, p. 62).

Not surprisingly, ebook publishers have been at the forefront of value research concerning ebooks, presenting a marketing perspective that often focuses on the idea of value. Springer's White Paper on ebook costs and benefits (Renner, 2007) surveyed librarians at six academic institutions around the world. The report, while containing no quantifiable statistics, qualitatively demonstrates that librarians are well aware that ebooks offer a cost-savings component to libraries as well as a benefit component to users. The Elsevier Publishing perspective on the value of ebooks (which arrives at similar conclusions) is found in a series of commissioned reports beginning in 2006 (Hughes, 2006) as well as a 2009 NASIG presentation (Bunkell and Dyas-Correia, 2009) and the current research. Before this study, Elsevier's research has relied on librarian interviews and student focus groups to note the positive characteristics of ebooks for both libraries and users. The 2010 study appears to be the first to gather quantitative data on the value users assign to ebooks.

Methodology

Following approval by the UIUC Institutional Research Board (IRB), the UIUC Library sent a mass email to our faculty and graduate students on October 1, 2010 inviting their voluntary participation in an Elsevier ebook study. The final number of UIUC participants totaled 129 faculty and Ph.D. students. The number and breadth of participant disciplines are found in Figure 4. The response group was mostly populated by Ph.D. students; 88% (114) identified themselves at doctoral students and 12% (15) identified themselves as faculty.

Figure 4. A breakdown of UIUC participants in the Elsevier study by discipline.



After an initial questionnaire, which established users' familiarity with and previous use of ebooks, participants were asked to conduct one of their normal searches for information in their discipline on the Elsevier ebook platform. Following each search, and after reading some portion of an Elsevier ebook, a logbook diary entry was completed for each ebook interaction. The study asked researchers to fill out logbook diaries for up to four Elsevier ebooks, and participants were given up to four weeks to complete the diaries. After their last logbook diary was completed, a final questionnaire was administered. Three questions concerning value were posed; researchers were asked to rank the value of each ebook used on a 1-10 scale, they were asked to categorize each ebook viewed on a scale from "could have done without" to "need to have," and finally they were asked to rank value on a seven-point scale, from "extremely valuable" to "not at all valuable."

Results

The results for the UIUC/Elsevier ebook study were not surprising and in fact mirrored many of the finding in previous ebook studies. Table 5 shows the participants' perceptions of the main advantages of ebooks; accessibility tops this list.

Table 5. Results for the question, "What are the main advantages of E-books from your perspective? [PLEASE TICK A MAXIMUM OF 3 BOXES]"

24 hours/7 days per week access	**82**	**63.6%**
online access	**79**	**61.2%**
easy to search and navigate	**52**	**40.3%**
downloading to laptop	**39**	**30.2%**
easy storage	**36**	**27.9%**
off campus access	**33**	**25.6%**
copying and pasting	**16**	**12.4%**
downloading to e-reader	**9**	**7.0%**
easy to share with colleagues	**8**	**6.2%**
easy to use in an electronic learning environment	**6**	**4.7%**
easy to use multiple documents at once	**5**	**3.9%**
use of multimedia in the E-book	**4**	**3.1%**

Figure 5. Results for UIUC users answering "My online behavior includes the following characteristics." Results between disciplines are not comparable due to the small number of respondents in the humanities; data are shown to compare within subject disciplines.

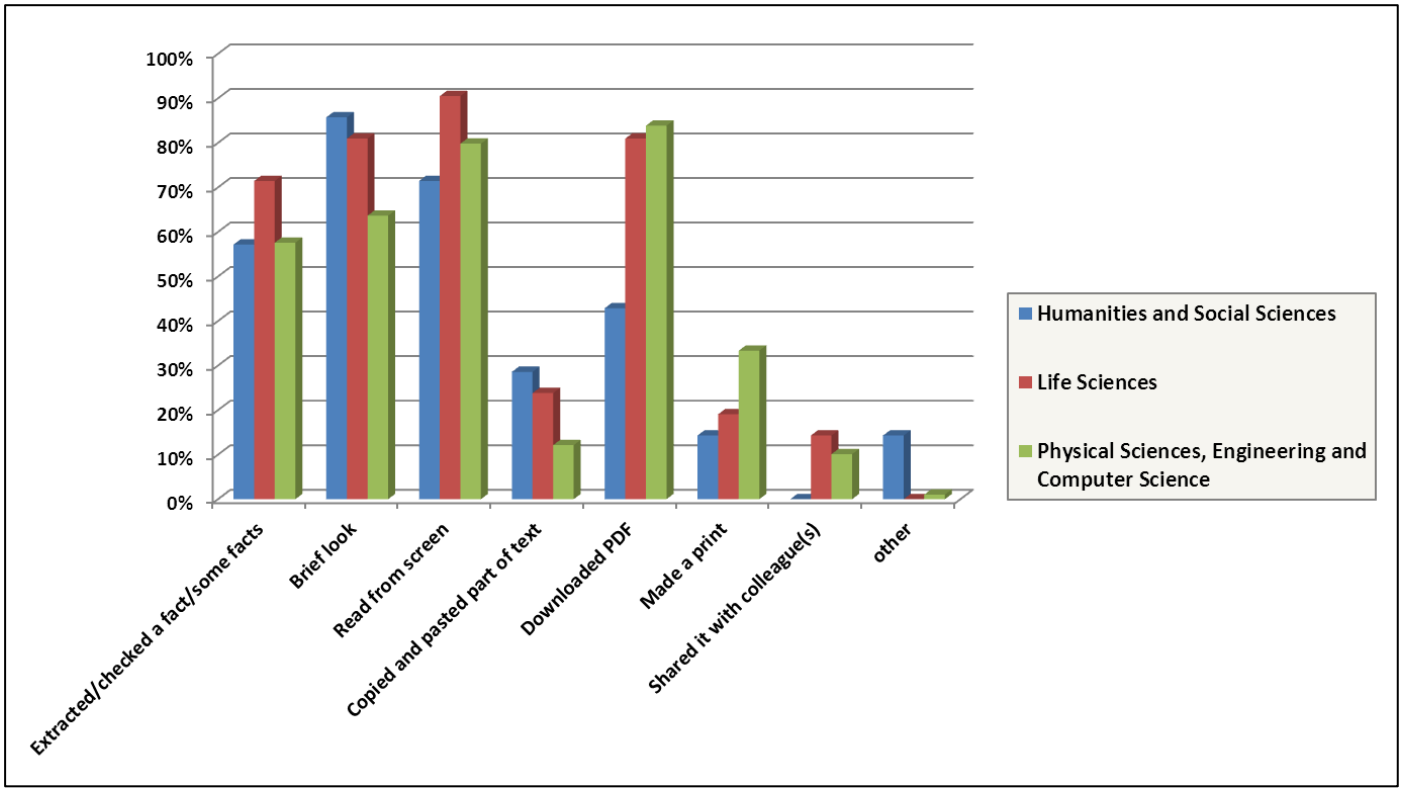


Figure 5 shows the characteristics of the participants' online behavior. These behaviors show that UIUC ebook users are not typically using ebooks to copy and paste text, to share with colleagues or to make a print. These behaviors show up again when asked about value; true to form, participants state they do not value the ability to copy and paste or make a print (Figure 6). Users do value the ability to download a PDF and read information from the screen.

Figure 6. Results for UIUC users answering "How do you value the information from this Elsevier E-book?"

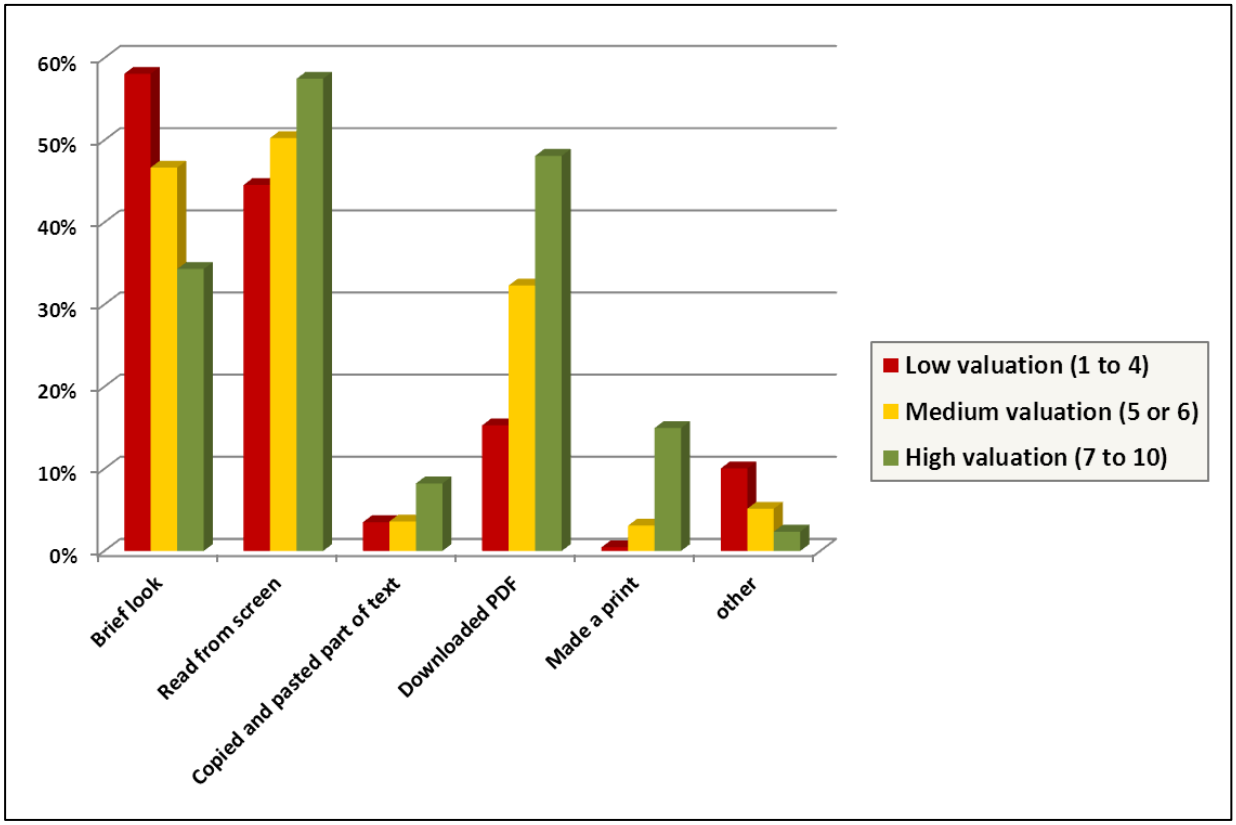
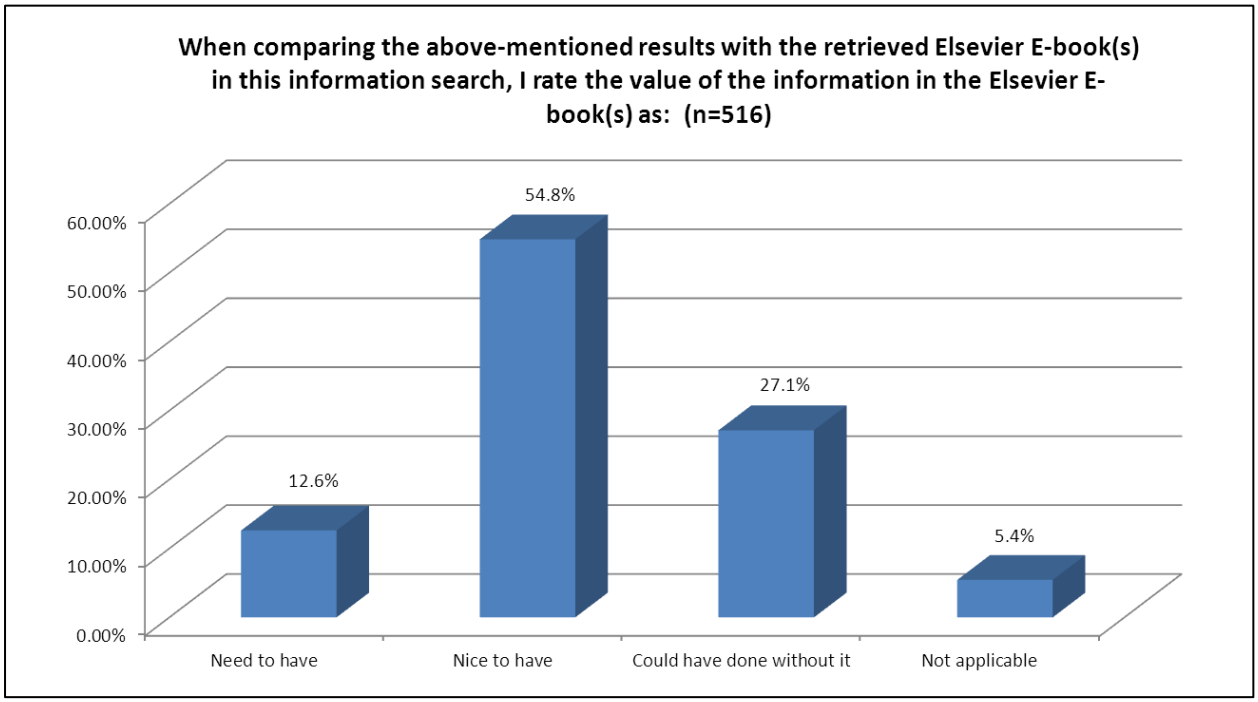


Figure 7 shows the results from the question posed, "how do you value the information from this Elsevier ebook?" Nearly 70% of respondents (67.4%) replied that they either needed to have the ebook or the ebook would be nice to have. While not a rousing cry for ebooks, neither do these results show any serious concerns about the ebook format's use or accessibility.

Figure 7. Results for UIUC users answering "How do you value the information from this Elsevier E-book?"



Conclusions

From the library's perspective, ebooks have a low cost-per-ebook; have a low cost-per-use; are more cost effective to lend, store and preserve than print; offer greater accessibility to users (24/7 anywhere); offer greater availability to users (higher uses per ebook than print); and allow libraries to provide a broader collection variety due to low cost package purchases. From the user's perspective, ebooks offer 24/7 accessibility from anywhere, are "Nice to Have" (12.6%) or "Need to Have" (54.8%), are not likely to be shared with colleagues, printed out, or be used in "cut and paste," and are most likely to be read from the screen or briefly reviewed. Users also want to be able to download ebooks in PDF format. These many ebook attributes seem to signal a "win-win" for libraries and library users.

Spiro and Henry believe that even in 2011 it is premature for all libraries to migrate en mass to an e-only monograph collection, but they also note that libraries "must be future oriented in preparing for such a shift" (Spiro and Henry, p. 66). Their paper is a measured review that concludes that ebooks, while perhaps not poised to ever make up 100% of library monograph

collections, are an inevitable part of those collections' futures. One reason this migration from pbooks to ebooks may be successful is, as demonstrated by this study, the value that both libraries and users can gain from this format.

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