E-Book Perceptions and Use in STEM and Non-STEM Disciplines: A Comparative Follow-Up Study

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abstract: This article describes the results of a survey that gathered data on perceptions and use of e-books from undergraduate students, graduate students, faculty, and staff. The investigators analyzed the results based on user affiliate status and subject discipline and compared the results with the findings of a similar, smaller-scale study conducted in 2012. The study concludes with a discussion of the major findings and their implications for academic libraries and publishers, as well as areas for further inquiry.

Introduction

Talk to any group of academic librarians, and you will hear a range of opinions on e-books: their advantages and disadvantages compared to print books; the ways in which they solve or create all manner of problems for libraries; how they will either spell the end of academic research or will open up a new era of scholarly inquiry. In 2012, the authors conducted a survey of the students and faculty in three colleges at the University of Maryland in College Park to test whether the scholars who use these resources shared those opinions. That survey provided valuable data regarding preferences for e-books among students and faculty in the arts, humanities, and social sciences. The findings were published in *portal* in 2014. In the three years since the original survey, the e-book landscape has evolved rapidly. E-book collections in academic libraries in general, and at the University of Maryland (UMD) Libraries in particular, have grown dramatically. Consequently, the authors administered a follow-up survey to update and

expand upon the original findings. As with the original, the current survey had several guiding research questions, including:

- Do (or how often do) University of Maryland faculty and students identify, access, and use e-books for academic purposes?
- For what types of material (monographs, edited collections, conference proceedings, reference works, and the like) do faculty and students prefer the UMD Libraries to buy e-books? For what materials would they like the libraries to buy print books?
- How do use and attitudes compare among respondents who do or do not use the physical libraries?
- How do use and attitudes compare among respondents of different statuses (faculty, graduate student, or undergraduate student)?

The authors added two research questions for this study:

- How do use and attitudes of respondents in science, technology, engineering, and math (STEM) disciplines compare with those of respondents in non-STEM disciplines?
- How do use and attitudes among respondents compare with previously published studies, including the authors' previous e-books survey?

The data collected will be valuable to academic librarians and will add to the growing body of literature on academic user opinions of e-books. Additionally, the findings will be useful to librarians involved in the ongoing work of negotiating with publishers to ensure e-book platforms and business models that are usable, equitable, and sustainable. For a brief overview of the implications of this study for collection managers, see Table 3.

Institutional Context

The University of Maryland is a major public research university in College Park, less than ten miles north of Washington, D.C. It is the flagship institution of the University System of Maryland and offers 91 undergraduate majors and more than 200 graduate degrees through programs in twelve colleges and schools. The university has a total enrollment of 37,248 (26,538 undergraduate and 10,710 graduate); a tenured or tenure-track faculty of 1,511, among 4,467 total faculty; and a staff of 5,494.

Literature Review

In the spring of 2012, the UMD Libraries surveyed library users on their use and perceptions of e-books.[1] While participants in that survey represented users in each affiliate status (undergraduates, graduate students, faculty, and staff), the study included only a handful of the subject disciplines (the colleges of Arts and Humanities, Behavioral and Social Sciences, and Education) at UMD. Since that study's publication, the design of limiting subject participation based on subject discipline or affiliate status has remained a widely used methodology for studying e-book usage and perceptions because it allows for comparative analysis across different disciplines and statuses. The literature provides plentiful examples of such studies.[2]

Yet, considering the wide range of academic programs at UMD, the 2012 e-book study, which did not include users from STEM disciplines, left considerable room for further research. While users within STEM disciplines are generally presumed to be more accepting of e-books, recent studies indicate that they may share many of the same frustrations as users in the humanities and social sciences.[3] If similar aspects of e-book usage frustrate users across different disciplines, libraries might be better served by examining e-book usage and perceptions at a macro level. Many of the large studies in this area date from more than five years ago.[4] Moreover, the user interface designs for e-book platforms change so rapidly that such studies provide only "a snapshot of platforms at a certain moment," rather than definitive accounts of e-books and the academy.[5] Consequently, the conclusions drawn from these studies may not reflect user reactions to the most recent changes in e-book availability and platforms, or the increased availability of mobile devices that support e-books.[6]

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Despite numerous studies of e-books and academic libraries, a number of points of contention remain. One such disagreement is the impact of e-reader ownership on user attitudes toward e-books. The market penetration of e-readers has increased dramatically, with *Forbes* estimating that Amazon sold 20 million Kindle devices in 2013 alone.[7] One of the major findings of the UMD Libraries 2012 study was that e-reader ownership led to increased e-book use.[8] Likewise, Barbara Glackin, Roy Rodenhiser, and Brooke Herzog found that access to multiple mobile devices "significantly increased" how frequently a user accessed e-books.[9] However, a study by Julie Gilbert and Barbara Fister at Gustavus Adolphus College in St. Peter, Minnesota, found little correlation between such ownership and student attitudes toward e-books.[10]

While many aspects of the role of e-books within libraries are fraught with controversy and disagreement, a number of findings appear to be coalescing. For example, users are more inclined to turn to e-books than anecdotal evidence and professional intuition suggest.[11] Many users recognize the benefit of the immediate, around-the-clock access that e-books provide.[12] In addition, users view reference titles as especially well-suited for electronic formats.[13] However, user awareness of the availability of e-books from academic libraries is low.[14] Another barrier to e-book adoption is that users are frustrated by the systems, platforms, and digital rights management (DRM) imposed by e-book publishers and aggregators.[15]

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Methodology

The basis of this study was an online, self-selected survey, created using the Qualtrics online survey system. The survey consisted of fourteen multiple-choice and eight open-ended questions. Seven of the open-ended questions were conditional, requiring a specific answer to one of the multiple-choice questions to appear, so not every participant answered the same number of questions. The authors adapted the survey instrument from the one used in their 2012 study, with some adjustments based on the results of that earlier survey.[16] One of the major changes involved removing the distinction between "academic" and "recreational" use of e-books, which failed to yield any significant results in the first study. The investigators modified a question about e-reader ownership to ask, instead, about which device(s) respondents used to read e-books. The new survey also changed an open-ended question—"What, if anything, would make you more likely to use e-books?"—to a multiple-choice question, using the analyzed responses from the first survey. Questions addressed the use of the physical library and online library resources, use of and attitudes about e-books, and preferences for print or e-books for various types of material (monographs, specialized and general reference, citation manuals, conference proceedings, edited collections, and literature). Three demographic questions were included to allow comparisons by status (faculty, staff, graduate student, undergraduate student, or research affiliate), by college, and by department. A copy of the survey is included as Appendix A and is also available online at http://ter.ps/e-book2014.

The survey remained open from October 1 to November 22, 2014, and was advertised extensively across campus. Publicity efforts included e-mail announcements distributed by subject librarians and the UMD Libraries communications office; the libraries' social media accounts; printed flyers posted in campus buildings; and handouts with the survey URL distributed in front of classroom buildings and the student union. The study was also advertised on the libraries' home page. A grant from the University Libraries' Library Research Fund provided financial support, which the authors used to purchase survey incentives in the form of one iPad Mini and eight $25 Amazon.com gift cards. Prizes were prominently featured in marketing materials that publicized the survey and were distributed by random drawing, via a separate form linked from the end of the survey to maintain respondents' anonymity.

The investigators exported the survey results to a Microsoft Excel spreadsheet and used IBM SPSS (Statistical Package for Social Sciences) 21, a software package for statistical investigations, to conduct descriptive statistics analysis and hypothesis testing. The researchers carried out a variety of tabulations using affiliate status and college affiliation as grouping variables. A common line of thinking, among both librarians and disciplinary faculty, suggests that scholars in the sciences, while more comfortable using materials in electronic formats, avoid using monographic materials in any format. Emblematically, one respondent to the survey commented, "I'm in science, nothing is in books, e-books or otherwise." To test these prevailing conceptions about the behaviors of researchers based on disciplines, the investigators grouped the twelve academic colleges and schools into "STEM" and "non-STEM" for comparison. The researchers listed the College of Agriculture and Natural Resources; the College of Computer, Mathematical,

and Natural Sciences; the James Clark School of Engineering; and the School of Public Health as STEM. The remaining colleges and schools were classified as non-STEM.

The investigators calculated the correlations and conducted hypothesis tests for the correlations between visiting the physical library, using online resources, and use of e-books. In this survey, entering the physical library, use of online resources, and use of e-books are all ordinal scale data. Therefore, Spearman's rho, a statistic that indicates the closeness of the relationship between two variables, was used as the measure of association. For "check all that apply" questions, the investigators calculated the frequency for each option and used the "Aggregate" function in SPSS to create a list of possible combinations of choices with frequency to determine which combinations were more popular than others. The investigators recoded open-ended Questions 16 to 22 into eighteen different categories and recoded open-ended Question 24 into twenty-two different categories (see Appendix B).

Demographics

In total, 2,188 people completed the survey. By college, the largest percentage of responses came from the College of Computer, Mathematical, and Natural Sciences (15.7 percent); the College of Behavioral and Social Sciences (11.7 percent); the College of Arts and Humanities (10.7 percent); and the School of Public Health (9.7 percent). The fifth largest group (9.5 percent) chose "I am not affiliated with a college," which required respondents to specify a campus unit. "Not affiliated" answers fell into four categories: academic support unit (for example, Undergraduate Studies), nonacademic support unit (for example, Health Center), research unit (for example, Division of Research), and Division of Information Technology.

By status, the largest percentage of responses came from graduate students (45.1 percent), followed by undergraduate students (31 percent), then staff (12 percent) and faculty (11.1 percent). Research affiliates made up just 0.8 percent of respondents. Note that "staff" was not offered as an option in the 2012 survey, so those responses were combined with those of faculty in the previous study.

The investigators excluded respondents who chose "University Libraries" (70) or "I am not affiliated with a college" (207) in comparative analysis of STEM and non-STEM respondents. Among the survey participants, 820 were classified as STEM and 1,091 as non-STEM, for a total of 1,911.

Out of a total campus population of 47,209, the overall response rate was 4.2 percent. Graduate students had the highest response rate at 9.22 percent, and undergraduates had the lowest at 2.56 percent. Faculty and staff response rates were 5.42 percent and 4.77 percent, respectively. Because exact enrollment numbers are difficult to obtain by college or department, the investigators did not calculate response rates by unit affiliation. Because of the low overall response rate, the potential for nonresponse bias is high. There should have been no "digital divide" among student and faculty participants and nonparticipants. Many university staff members (for example, facilities maintenance and housekeeping) lack easy access to e-mail or the Internet, since the university does not furnish them with computers and they often work in areas where computers are not available. Yet their response rate roughly equaled that of their faculty counterparts.

Table 1.
Responses by college affiliation

College	Frequency	Valid percentage
College of Agriculture and Natural Resources	68	3.1
School of Architecture, Planning and Preservation	88	4.0
College of Arts and Humanities	235	10.7
College of Behavioral and Social Sciences	255	11.7
Robert H. Smith School of Business	137	6.3
College of Computer, Mathematical, and Natural Sciences	343	15.7
College of Education	65	3.0
James Clark School of Engineering	197	9.0
Phillip Merrill College of Journalism	103	4.7
College of Information Studies	115	5.3
School of Public Health	212	9.7
School of Public Policy	93	4.3
University Libraries	70	3.2
I am not affiliated with a college	207	9.5
Totals	2,188	100.0

Nonrespondents likely included those who do not regularly check e-mail (and thus missed the e-mail invitations), who do not visit the libraries' website (and thus missed the news items), or who do not regularly come to campus (and thus missed the posted flyers). Those who hold extremely negative views of e-books may also have chosen not to respond, just as those who hold highly favorable views of e-books may have been eager to participate, leading to proportionally more positive responses. Those who were unmotivated by the survey prizes, either because they have no interest in an iPad or because they already own one, may also have chosen not to respond, though it is hard to predict how this omission would affect the results. Other potential biases include self-selection effects, such as those introduced by offering a tablet computer and Amazon gift cards as survey incentives. People who were already disposed to using e-books (including shopping for them online) may have been more likely to take part in the survey, leading to more positive responses.

Library Use

The survey asked respondents how frequently they physically enter a campus library and how often they access online library resources. When examined together, the responses are consistent with a number of findings from the 2012 study. Across all affiliate statuses,
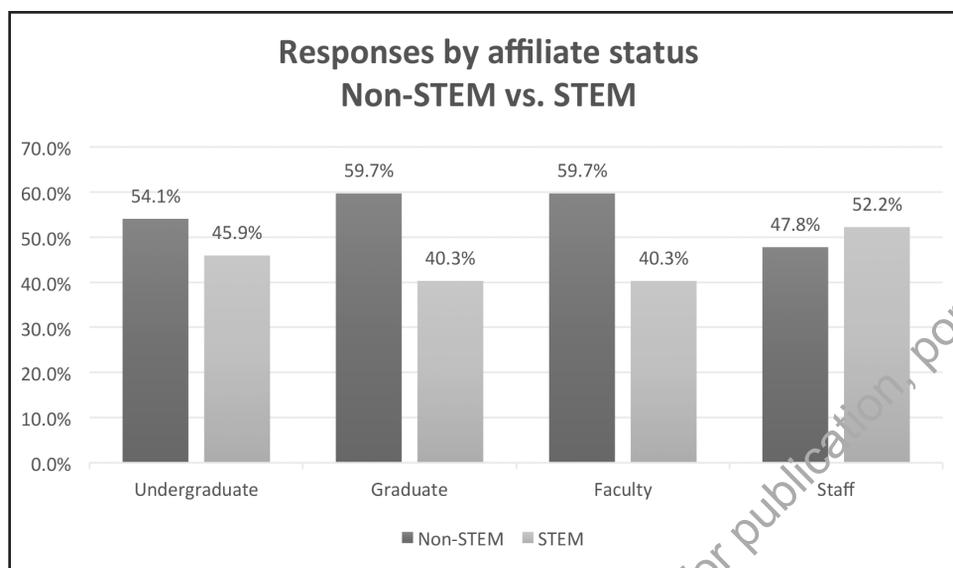
Figure 1. Responses by affiliate status, non-STEM versus STEM

respondents reported using online library resources more frequently than physically entering a campus library. This trend, in large part, can be attributed to faculty and graduate student respondents, who said they used online library resources more frequently than they physically entered a campus library, with roughly 70 percent of both groups reporting daily or weekly online library resource use. On the other hand, undergraduates remain heavier users of physical library spaces, with 70.5 percent of respondents claiming to enter a campus library at least weekly. Only 41.3 percent of undergraduate respondents reported daily or weekly use of online library resources. The results of the 2014 study show some noteworthy new findings, as well. Non-STEM respondents reported daily or weekly use of the physical library more frequently (51.7 percent) than STEM respondents (42.8 percent). However, non-STEM and STEM respondents reported daily and weekly use of online library resources at similar frequencies, 60.6 percent and 57.7 percent, respectively. Respondents who claimed to never enter the physical library, regardless of discipline and affiliate status, increased from 5 percent to 8 percent.[17]

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E-Book Use

Reported use of e-books "for academic purposes" saw a noteworthy increase from the 2012 study. While 31 percent of respondents said they "never" used e-books for academic purposes in 2012, only 21.9 percent of participants selected that option in 2014. Moreover, 32.5 percent of 2014 respondents reported daily or weekly academic use of e-books.

Undergraduates described the most frequent use of e-books for academic purposes (38.6 percent), followed by graduate students (37.2 percent), faculty (16.2 percent), and staff (14.2 percent). Faculty and staff were also the most likely to report "never" using e-books for academic purposes, at 33.1 percent and 47.7 percent, respectively. A larger proportion of STEM respondents acknowledged frequent use of e-books for academic purposes (38 percent) than non-STEM respondents (31.3 percent).

The response data indicate statistically significant but moderately weak-positive correlations between using the physical library spaces, using online library resources, and using e-books for academic purposes, with correlations of approximately 0.25. To calculate these correlation coefficients, the investigators examined if the sample effect generalizes to the population by conducting a hypothesis test for whether Spearman's rho is equal to zero at the population level. Using SPSS, the resulting output demonstrated that all three Spearman's rho measurements are statistically significant, at a significance level of 0.001. Since the correlation coefficient in the population is non-zero, there is a statistically significant linear relation between the use of the physical library, using online resources, and use of e-books. This correlation indicates that respondents who reported frequent visits to the physical library were more likely to report frequent use of online library resources and frequent use of e-books for academic purposes. On the other hand, this also means that users who admitted seldom visiting the physical library were less likely to report frequently using online library resources or e-books for academic purposes.

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The survey also asked respondents if their frequency of using e-books for academic purposes had increased, stayed the same, or decreased compared to three years ago. Sixty-four percent reported that their use had increased during this period, while 34.2 percent said their use had stayed the same. Just 1.8 percent reported decreased use of e-books compared to three years ago. These results show a substantial growth in the number of respondents reporting increased use (50 percent in 2012) and a substantial decrease in the number of respondents reporting that their use stayed the same (49 percent in 2012). The inclusion of new colleges and schools in the current survey does not appear to have caused the increase; a comparison of the three colleges surveyed in 2012 show that all three had increases in the percentages of respondents reporting that their use of e-books had grown. There was no significant difference between STEM and non-STEM responses in the survey.

E-Book Access

Respondents were asked to specify which devices, if any, they currently use to read e-books. They were asked to select all that applied from a list of options: "Kindle," "Nook," "Other e-reader," "Tablet," "Mobile phone," "Computer," and "I don't use e-books." Participants who selected "I don't use e-books" were automatically prompted by Qual-

trics to omit the subsequent five questions regarding how they access e-books. Among the respondents who read e-books, "Computer" was selected at the highest rate (72.5 percent), which could refer to either a laptop or desktop. The next most popular answers were "Tablet," "Mobile phone," and "Kindle," selected by 37.9 percent, 36.7 percent, and 25.6 percent, respectively. "I don't use e-books" was selected by 12.3 percent, and only 5.9 percent and 3.3 percent chose "Nook" or "Other e-reader," respectively. There were no significant differences between STEM and non-STEM respondents. Because respondents could choose more than one device, the investigators were able to analyze the most popular combinations of devices: 98 respondents chose the combination of "Tablet," "Mobile phone," and "Computer"; 93 participants chose "Mobile phone" and "Computer"; and 81 respondents chose "Tablet" and "Computer." Differences in question wording make it impossible to directly compare these results to those from 2012. That said, the general order of preference from 2012 was "Kindle," "Nook," "Tablet," "Phone," then "Laptop," so it is possible that e-readers are now used less frequently.

When asked for their primary source for accessing e-books, respondents selected "Commercial site" most frequently, at 35.9 percent. "Free website" followed at 26.8 percent and "University of Maryland Libraries website" at 26.2 percent. "Public library website" and "Other" received only 8.4 percent and 2.7 percent of responses, respectively. While "Commercial site" and "Free website" stayed relatively steady from the 2012 survey (31 percent and 30 percent, respectively), the percentage of respondents choosing "University of Maryland Libraries website" rose dramatically, up to 26.2 percent from 11 percent in 2012. "University of Maryland Libraries website" ranked as most popular among undergraduate students (29.5 percent), while staff chose it at the lowest rate (14.4 percent). Faculty and staff selected "Commercial site" at the highest rates (45.2 percent and 47.5 percent, respectively), while graduate students chose "Free website" at the highest rate (30.1 percent). Non-STEM participants chose "Commercial site" at a higher rate than STEM respondents (39.7 percent versus 30.6 percent), while STEM respondents chose "Free website" at a higher rate (33.8 percent, versus 23.4 percent for non-STEM). The percentages of STEM and non-STEM respondents choosing "University of Maryland Libraries website" were almost identical. Although the question provided examples for both "Commercial site" (for example, Amazon, Barnes & Noble, or Google e-bookstore) and "Free website" (for example, Google Books, HathiTrust

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Digital Library, or Project Gutenberg), some respondents may have been confused about the true source for most of the e-books they use.

The survey also asked participants specifically how they discover and find e-books held by the UMD Libraries. The most frequent response was "Search the catalog or WorldCat" (45 percent); followed by "I don't use e-books from the UMD Libraries" (24 percent); and "Search for individual books in Research Port," the electronic portal to the UMD Libraries' databases (22 percent). "Search within a specific e-book collection" received the lowest number of responses (16 percent). Interestingly, not only were all four answers chosen in the same order as in the 2012 survey, but also there were no significant differences between STEM and non-STEM participants in the current survey. Thirty-nine

respondents (2 percent) chose "Other, please specify" and provided additional free-text responses. Those responses most often mentioned Google or Google Scholar, which, if the user is on campus or logged in via the campus proxy authentication, link the user to a UMD-supplied e-book version if available. Other popular responses were variations of "I didn't know the libraries had e-books" or "I've tried looking for e-books from the libraries but couldn't find them." Others reported that they find UMD's e-books via professor recommendations, or by professors listing or directly linking to them via UMD's learning management system.

Respondents were also asked which e-book collections they had accessed through the UMD Libraries in the past year. The most popular choice was "I've used e-books

> **Many users do not know (or care) which publisher or vendor provides the content they need.**

from the UMD Libraries but I don't know which collection(s)" (30 percent). This answer ranked among the most popular choices in the 2012 survey as well, demonstrating yet again that many users do not know (or care) which publisher or vendor provides the content they need. One respondent articulated these sentiments clearly, replying, "I honestly don't remember; I go wherever WorldCat takes me!" The collections chosen most

frequently were EBSCO e-book Collection (41 percent), IEEE (Institute of Electrical and Electronics Engineers)/Wiley e-books (20 percent), Springer e-books (19 percent), Oxford Handbooks Online (15 percent), ebrary (13 percent), and Gale Virtual Reference Library (13 percent). With the exception of IEEE/Wiley e-books, which was not included last time because the focus was on researchers and students in non-STEM disciplines, these same collections were also the most popular in the 2012 survey, with EBSCO again at the top.

The survey queried respondents about how often they download e-books to a device for offline use, read e-books online via a website, or print at least a portion of e-books, and the responses showed some notable changes from the 2012 study. When asked how often they read e-books while connected to the Internet, 8 percent of respondents in the 2012 study chose "never," 26 percent said "sometimes," and 35 percent answered "most of the time." In the 2014 study, these proportions changed to 5.3 percent (never), 36.6 percent (sometimes), and 32.4 percent (most of the time). The findings of the 2014 study also suggest that users print out portions of e-books or entire e-books more frequently than in 2012. While nearly 75 percent of respondents said they "never" or "rarely"

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printed out at least portions of e-books in 2012, that proportion fell to 67 percent in 2014. The most noteworthy change in reported behavior occurred in regard to downloading e-books for offline use. Respondents reporting that they downloaded e-books for offline use "frequently" or "always" remained relatively stable. However, while 52 percent of participants in the 2012 study said that they "never" downloaded an e-book to a device for offline use, in 2014 the percentage of respondents reporting "never" fell to 11.5 percent. Only

12.8 percent of participants in the 2014 study reported "rarely" downloading e-books

for offline use. The clear majority reported at least sometimes downloading e-books to a device for offline use. These results indicate that the ability to quickly and easily download an e-book in a common format (such as pdf) should be a critical feature of any e-book platform considered for purchase. As one commenter explained:

> I love having access to e-books, but I despise being forced to read them on my laptop screen. Some of them, for whatever reason, can't be downloaded. (I've gotten a message saying something like "you have to read this book online first" but then I never do find a way to download it.) I'm sure it's something about the rights, but it is maddening . . . Otherwise, though, I think e-books are a great thing.

E-books versus Print Books: Format Preferences

Given the diverse range of materials that publishers now offer in electronic formats, both the 2012 and 2014 surveys asked users which types of material they prefer as print books over e-books, and vice versa. The question provided definitions for a variety of common academic materials—scholarly monographs, edited collections, conference proceedings, general and specialized reference, citation manuals and style guides, and literature—before asking respondents to choose "I prefer print," "I prefer e-books," "No preference," or "It depends" for each. Participants who selected "It depends" for any type of material were given the option to explain their response.

Scholarly Monographs

Compared to the 2012 survey, respondents' overall preference for e-book scholarly mono-graphs has risen only slightly (from 26 percent to 30 percent). However, their inclination for print has notably declined (from 42 percent to 27.6 percent), and the percentage who say they have "no preference" rose sharply, from 23 percent to 32.9 percent. The number of respondents who answered "It depends" remained the same, around 9 percent. Taken in aggregate, these numbers suggest that researchers may not wholeheartedly embrace e-books, but they are at least losing their resistance to them and cling-ing less tightly to printed books. STEM respondents preferred e-books significantly more than non-STEM respondents, 35.9 percent versus 28 percent, with a corresponding preference for print among non-STEM respondents (32 percent versus 22.7 percent). When cross-tabulated with respondent status, STEM graduate students had the overall highest rate of e-book preference at 41.3 percent, while non-STEM un-dergraduate students had the overall lowest rate of e-book preference at 19.4 percent.

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Edited Collections

While overall preference for edited collections in e-book form rose slightly from 32 percent in 2012 to 33.6 percent in 2014, the respondents who chose "I prefer print" de-

clined sharply (from 33 percent to 24.3 percent), and the number of participants with "No preference" rose from 24 percent to 33.1 percent. As with scholarly monographs, this seems to suggest a decreased resistance to e-books but not a new liking for them. STEM respondents favored e-book edited collections at a higher rate than non-STEM (38.5 percent versus 31.9 percent) and opted for print at a substantially lower rate (19.3 percent versus 28.7 percent). When cross-tabulated by respondent status, STEM faculty had the strongest preference for e-books (46.8 percent), and non-STEM undergraduates had the weakest preference for e-books (23.4 percent).

Conference Proceedings

Overall, respondents had a strong preference for e-books over print for conference proceedings, 45 percent to 14 percent. There was a slight increase in preference for e-books compared to the 2012 survey results (41 percent in 2012), while the percentage of "no preference" stayed the same at 34 percent. STEM respondents preferred e-book conference proceedings at a higher rate than their non-STEM counterparts, 48 percent to 38.8 percent, and favored print at a lower rate, 10.9 percent to 16 percent. Faculty reported the strongest preference for conference proceedings in e-book format, with 53.6 percent selecting this option. Undergraduates had the weakest preference, with just 34.7 percent selecting "I prefer e-books." STEM graduate students favored conference proceedings as e-books 62 percent of the time.

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General Reference

Preference for general reference materials decidedly favored electronic formats: 18.7 percent of respondents reported they would rather have print, 28 percent had no preference, 46.2 percent said they preferred e-books, and 7.1 percent answered "It depends." While these results largely align with the 2012 study, the 2014 study shows some variations between non-STEM and STEM respondents. Non-STEM respondents reported a slightly higher preference for print (22.3 percent) than STEM respondents (15.5 percent). Far more participants from both areas preferred general reference titles in e-format, with nearly half of participants from non-STEM (45.5 percent) and STEM (48 percent) liking e-books for such materials. Non-STEM faulty had the strongest preference for e-format (54.8 percent), while non-STEM undergraduates had the strongest preference for print (23.8 percent).

> **Preference for general reference materials decidedly favored electronic formats:**

Specialized Reference

The preferred format for specialized reference materials also aligned with the 2012 results, with 20.3 percent of respondents favoring print, 28.6 percent having no preference, 42.5 percent favoring e-books, and 8.7 percent selecting "It depends." The results again show slight differences between STEM and non-STEM respondents, with 23.6 percent of

non-STEM respondents reporting a preference for print specialized reference materials, as opposed to 16.8 percent of STEM respondents. As with general reference materials, participants from both areas favored specialized reference titles in e-format, with 46 percent of STEM respondents and 41.1 percent of non-STEM respondents indicating that preference. Non-STEM faulty had the strongest preference for e-format (47.8 percent), while non-STEM undergraduates had the strongest preference for print (25.0 percent).

Citation Manuals and Style Guides

As in 2012, 50.7 percent of respondents preferred the e-book format for citation manuals and style guides. In another example of decreased resistance to e-books, if not full adoption, just 16.1 percent indicated a preference for print, down from 21 percent in 2012, and 27.2 percent selected no preference, up from 22 percent. That said, non-STEM respondents showed a stronger inclination toward print (19.8 percent) than STEM respondents (11.6 percent). That inclination was evident in the selection of "No preference" as well, with non-STEM respondents staying consistent with 2012 at 22.8 percent and STEM respondents a much more flexible 30.9 percent. Non-STEM undergraduates showed the highest preference for print at 23.4 percent, while STEM graduate students, followed closely by non-STEM faculty, favor e-books at the highest rate (57.6 percent and 56.5 percent, respectively). This was the only type of material that garnered a majority of responses for either e-book or print, which aligns with the results of the 2012 survey, justifying the purchase of citation manuals and style guides in electronic format, particularly if multiple users can access them at once.

Literature

The responses for literature, while slightly less polarized than the 18 percent gap between print and e-books in 2012, still showed a strong preference for print. Overall, 40.4 percent would rather have print, 20.6 percent indicated no preference, 29.1 percent favor e-books, and 9.9 percent selected "It depends." This was true for both STEM and non-STEM, although STEM respondents did prefer e-books at the slightly higher rate of 43.7 percent, while non-STEM respondents favored e-books at just 32.6 percent. Non-STEM undergraduates showed the highest inclination for print at 47.8 percent, while STEM faculty had the highest preference for e-books at 36.4 percent.

> **Many participants mentioned a desire for access to both the e-book and print versions of a title.**

"It Depends"

Respondents had the option to select "It depends" and explain their reasoning if they did not have a clear preference for e-books or print books. Many participants mentioned a desire for access to both the e-book and print versions of a title. Another common refrain was liking print for in-depth reading. No other trends emerged from the remaining comments.

Barriers to E-Book Use

Respondents were asked what new features might make them more likely to use e-books so that the investigators could identify barriers to e-book use. The 2012 study asked a similar question, which solicited free-text responses that were coded and analyzed qualitatively. The 2014 study provided survey participants with a list of the most frequent answers from the 2012 study and asked them to select all that apply. Consequently, the percentage of respondents who identified a particular barrier to use in 2014 was much higher and cannot be compared directly with the 2012 results.

Despite this limitation, comparing the most frequently identified barriers from the two studies yields some interesting conclusions. In 2012, respondents identified a dearth of e-book title availability in their areas of interest and lack of e-reader ownership as substantial barriers to e-book use. In 2014, those barriers had dropped to fifth and seventh, respectively. In 2014, users were more concerned with the ability to download e-books to a device, the response moved from eighth in 2012 to fourth in 2014. Users have an increased interest in being able to annotate and highlight e-books, and that barrier moved from sixth in 2012 to second in 2014. The most consistent concerns and barriers to use were the limited findability and accessibility of e-books through the UMD Libraries website (third in 2012, first in 2014) and the cost of e-books from commercial vendors (fourth in 2012, third in 2014).

> **Users still do not always find the titles they seek. When they do find what they want, they frequently have difficulties navigating the perplexing combinations of interfaces and digital rights.**

As in 2012, a portion of respondents said they "always prefer print books to e-books." Eight percent of participants in the current survey (compared to 4 percent in 2012) chose this response, with non-STEM respondents much more likely than STEM respondents to select it (11 percent and 5 percent, respectively.) On the other end of the spectrum were survey participants who said they "already use e-books extensively or exclusively for academic purposes"; 3.4 percent of participants in the current survey (compared to 2 percent in 2012) reported frequent or exclusive use of e-books for such purposes.

The most popular responses point to the continued challenges encountered by library users when trying to find, access, and use e-books, whether through the University Libraries or commercial vendors. Despite the increasing number of e-books available in the UMD Libraries collections, users still do not always find the titles they seek. When they do find what they want, they frequently have difficulties navigating the perplexing combinations of interfaces and digital rights.

When asked for additional comments or suggestions regarding e-books at the University of Maryland, free-text responses clustered around several themes identified as barriers to use earlier in the survey and mirrored the free-text comments from the 2012 survey. These comment themes include "General availability"; "Publicity/Training/Didn't know about e-books"; "Ease of access/use"; and "I already use e-books." Definitions of these and other coding categories are included in Appendix B. Also as in 2012, some respondents used the opportunity to express emotional or idiosyncratic views on e-books, for example:

Table 2.
Reported barriers to e-book use

Answers to the question "What, if anything, would make you more likely to use e-books for academic purposes?"	2014 percentage	2012 rank of respondents
If e-books were easier to find and access through the UMD Libraries website	48.0%	3
If e-books were easier to highlight or annotate	44.0%	6
If e-books from commercial vendors were less expensive	43.2%	4
If e-books were easier to download to my device(s)	38.5%	8
If there were more e-books available in my areas of research interest	37.3%	1
If more of my course textbooks were available as e-books	37.2%	12
If I owned a dedicated e-reader	35.6%	2

Scientific evidence [shows] that people retain information better through the tactile process of reading a physical book . . . I will never be convinced that going completely digital is a good idea . . . Our society tends to embrace new technology 100 [percent] before realizing the ramifications of a completely digital world. Do we ever learn from history?

Conclusions

Like the 2012 study, the results of this survey provide some insight into user preference for print or electronic reading and study materials. For an overview of the implications for collection managers based on these results, see Table 3. Across all format types, undergraduates showed the strongest preference for print, with faculty and graduate students showing a strong predilection for e-books except for scholarly monographs, edited collections, and literature. For scholarly monographs, undergraduates showed the strongest preference for print, with graduate students and faculty indicating a slight inclination toward e-books. Undergraduates showed no clear preference for print or electronic versions of edited collections, while graduate students and faculty both expressed a

All three affiliate statuses indicated a clear inclination for literature titles in print.

Table 3.
Implications for collection development decision-making

Category	Finding	Action
Which collections?	While EBSCO, Springer, and IEEE (Institute of Electrical and Electronics Engineers)–Wiley were the top three collections selected by respondents, many respondents do not know which collection they typically access. Users may not find the distinction between different collections to be meaningful.	Facilitate access to the text of e-books from discovery layers and other search interfaces rather than attempting to purchase titles in a particular e-book collection.
Which devices?	Among the respondents who read e-books, "computer" was selected at the highest rate (72.5 percent), which could refer to either a laptop or desktop. The next most popular responses were "Tablet," "Mobile phone," and "Kindle." Users no longer seem to find e-readers necessary to read e-books.	Rather than dedicating resources to acquire e-readers for users, focus on increasing users' awareness of e-books paid for by their university library that can be accessed via their own personal devices.
Scholarly monographs and edited collections	Users still prefer print books for both scholarly monographs and edited collections, although their preference for print declined and the percentage of respondents who say they have "no preference" rose. STEM respondents preferred e-books significantly more than non-STEM respondents, with a corresponding preference for print among non-STEM respondents.	Buy print versions, although users in STEM fields may be more amenable to e-books.
Conference proceedings	Overall, respondents had a strong preference for e-books over print for conference proceedings, 45 percent to 14 percent.	Buy electronic versions of conference proceedings.

General and specialized reference	For both types of reference materials, there is a clear preference for e-books. For both STEM and non-STEM respondents across all three affiliate status, "I prefer e-books" was the most common response. This aligns with the results of the 2012 study.	Purchase reference materials using an "e-preferred" model, especially if options are available for nonlinear lending, which allows multiple simultaneous users, because it increases opportunities for the items to be used in teaching.
Citation manuals and style guides	As in 2012, 50.7 percent of respondents preferred the e-book format for citation manuals and style guides. Style manuals and style guides were the only type of material that garnered a majority of responses for either e-book or print.	Purchase electronic versions of citation manuals and style guides, particularly if multiple users can access them at once.
Literature	The responses for literature, while slightly less polarized than the 18 percent gap between print and e-books in 2012, still showed a strong preference for print.	Buy literature in print.
Buy both formats?	For many monographic format types, opinions remain sharply divided about the utility of e-book versions. A number of respondents indicate that they preferred having both versions of an item available; while the ability to search full text in electronic versions can be immensely valuable, print versions are still preferred for close reading.	When weeding, consider leaving "duplicate" print versions of e-books in the collection. If changing to an e-preferred model, allow requests for "duplicating" print copies. E-book publishers should consider offering a print plus electronic option, as has been offered by journal publishers.

Table 3., cont.

Category	Finding	Action
What would make patrons more likely to use e-books?	In both the 2012 and 2014 study, respondents identified findability and accessibility of e-books as preeminent barriers to use. Furthermore, survey participants frequently expressed in open response questions a lack of awareness regarding library holdings of e-books.	Assess usability of library websites and discovery tools with e-books in mind. Place more emphasis on marketing library e-books and offer training on how to find, access, and use e-books.
	Considerably more respondents in the current survey indicated that they download and print portions of e-books than in the 2012 study.	A publisher or other software developer could create a lightweight, digital rights management free e-book application that gives users intuitive annotation tools and allows for easy downloading and printing.
	Respondents felt that e-books' lack of highlighting and annotation tools stymied scholarship.	

preference for electronic versions. All three affiliate statuses indicated a clear inclination for literature titles in print. For conference proceedings, reference materials, and style guides, the data suggest a clear preference for e-books across all affiliate statuses. For these format types, all affiliate statuses selected "I prefer e-books" as the most common response, with "No preference" as the second most common choice. In aggregate, these responses show a decreased resistance to e-books from that reported in the 2012 study and suggest a shift in leaning toward e-books for some types of material.

This study also provides a look at user preference for print or e-books by discipline, broadly speaking. In this study, non-STEM and STEM respondents' stated preference for scholarly monographs and edited collections was divided equally among print, electronic, and no preference. However, non-STEM respondents showed a slight inclination for print, while STEM respondents showed a slightly larger inclination for electronic. However, neither result was definitive enough to generate a clear guide for purchasing these formats. Both non-STEM and STEM users prefer electronic versions for conference proceedings, reference materials, and style guides. For all four types of materials, both STEM and non-STEM respondents selected "I prefer e-books" as the most common response, with "No preference" as the second most frequent answer and "I prefer print" coming in third. Meanwhile, literature predictably showed a clear divide between non-STEM and STEM respondents: non-STEM users showed a heavy preference for print versions of literature titles, while STEM participants were more equally divided between favoring print or e-book versions.

The findings of this study further corroborate the growing consensus that a large portion of academic library users across affiliate statuses and subject disciplines have grown comfortable with e-book versions of conference proceedings, reference materials, and style guides. Users also increasingly appreciate the access and additional features that these electronic versions provide. The results of this study join the chorus of previous studies' findings, making a strong case for purchasing these types of materials using an "e-preferred" model. For materials likely to be used for teaching and in classroom settings, such as specialized reference materials and style guides, nonlinear lending licensing options that allow multiple simultaneous users are worth considering.

For monographic materials, opinions remain sharply divided about the utility of e-book versions. A number of respondents indicated that they like having both versions of an item available. While the ability to search the full text of electronic versions of monographs can be immensely valuable, users still would rather have print versions for close reading. One possible solution is for publishers to offer a "print plus electronic" option, as journal publishers have done.[18] If a print copy came free with an e-book purchase or was bundled at a discounted price, it would likely drive up e-book purchasing

> **While the ability to search the full text of electronic versions of monographs can be immensely valuable, users still would rather have print versions for close reading.**

by academic libraries. With more libraries purchasing e-books, publishers could then dedicate the resources necessary to develop and maintain e-book platforms with more robust features, such as annotations and the freedom to print and download content, eliminating what users often identified as current barriers to adoption.

The 2012 study concluded that e-reader ownership was an important factor for facilitating use of e-books, finding a correlation between e-reader ownership and e-book usage that other studies at the time corroborated.[19] However, the current study did not find a similar correlation between ownership of a dedicated e-reader and e-book usage, findings that align with other, more recent, e-book studies.[20] Whether due to technological advances in the past three years, recruitment of a different group of survey participants, or changes in user behavior, users no longer seem to view e-reader access as a necessary step for using e-books. Furthermore, participants in the 2014 study most often selected a computer, tablet, and smartphone as devices for accessing e-books; no e-reader of any type ranked among the top three options chosen. This suggests that libraries need not dedicate resources toward acquiring e-readers. Rather, those resources should be directed toward increasing user awareness of e-books paid for by the university library that can be accessed via users' personal devices.

> Users no longer seem to view e-reader access as a necessary step for using e-books.

Furthermore, considerably more participants in the current survey indicated that they download and print portions of e-books than in the 2012 study. While 52 percent of 2012 respondents reported that they "never" downloaded an e-book to a device for offline use, in 2014 those answering "never" fell to 11.5 percent. With only 12.8 percent of participants in the 2014 study said they "rarely" downloaded e-books for offline use, the clear majority of respondents at least sometimes download e-books to a device for offline use.

One exasperated respondent pointedly stated, "I absolutely DESPISE using e-books," pleading "please do not shift UMD's resources from print to e-books." Respondents felt that e-books' lack of highlighting and annotation tools stymied scholarship. This individual continued: "E-books are difficult to use [because] when writing a dissertation, one needs to annotate books and use them in conjunction with many other sources and this is so hard to do with an e-book." This complaint will no doubt interest librarians, because users are expected to refrain from marking up the physical items loaned to them. Nevertheless, this common frustration suggests that e-books may become more popular among users if a publisher or other software developer can create a lightweight, DRM (digital rights management)-free e-book application that provides intuitive annotation tools. However, studies also have suggested that, even when provided with robust options, users overestimate their use of annotation tools, leaving the importance of e-book annotation up for further debate.[21]

In both the 2012 and 2014 study, participants identified limited findability and accessibility of e-books as preeminent barriers to use. Furthermore, survey participants frequently expressed in open-response questions a lack of awareness regarding library holdings of e-books, with users suggesting that the UMD Libraries need to place more emphasis on marketing e-book collections and offer training on how to find, access, and use them. While the percentage of respondents who chose "University of Maryland Libraries website" as their primary source for e-books rose considerably from the 2012 study, this suggests that there are still issues regarding users' familiarity with the academic e-book ecosystem. While these issues could indicate generalizable challenges

involving usability and lack of awareness of e-books, they also stand out as potential local issues related to UMD Libraries' website and discovery layer.

Suggestions for Future Research

To increase confidence and widen the applicability of this study's results, library and information science (LIS) researchers and practicing librarians could consider adopting this study's survey instrument and conducting a similar study at their home institutions. Other social science disciplines, such as some fields within psychology and political science, have dealt with a crisis of confidence in the validity of research findings due to nonreplicable results.[22] LIS research, which is often qualitative and conducted as case studies in single sites, suffers many of the same problems. LIS researchers and practicing librarians should endeavor to confirm the results of existing studies, such as this one, at their own institutions to increase the validity of the field's evidentiary literature.

Libraries need to place more emphasis on marketing e-book collections and offer training on how to find, access, and use them.

As college and university libraries continually look for more quantitative measures of their impact on campuses, considerable attention has turned to how libraries can increase student engagement, improve student learning, and lead to higher retention and matriculation rates.[23] Although recent studies by Barbara Glackin, Roy Rodenhiser, and Brooke Herzog as well as by Ee-Lon Lim and Khe Foon Hew suggest that e-books can positively impact student learning, more research is needed to determine how library collections' acquisitions models, which have become increasingly e-preferred, might affect these crucial assessment metrics and indicators.[24]

Perhaps the largest disagreement within the profession about e-books, and one not addressed within this study, hinges on whether academic libraries ought to acquire them at all given the current difficulties surrounding their access and acquisition. For example, Macalester College in St. Paul, Minnesota, while recognizing the potential value of e-book collections, believes that the current infrastructure and restrictions placed upon e-books "endangers the ecosystem of sharing and does a disservice to our patrons and community."[25] Participants in this study's survey echoed those sentiments, with one recounting the experience of trying to "set-up an e-book program . . . with the library but [finding it] very . . . expensive and . . . technically impossible." To address these issues, Macalester has published a set of standards it requires from publishers and vendors, and has urged other institutions to adopt these standards to put pressure on publishers to develop new infrastructures that facilitate access while remaining "respectful of copyright and fair use guidelines."[26] Others have suggested that many of these problems result from e-books' relative nascence and can be expected to improve naturally over time, pointing to e-journals as a useful analogy.[27] While initially unpopular and viewed with skepticism by many users, e-journals overcame low awareness and poor design to emerge as a foundational component of scholarly communication for many disciplines.[28] Given this example, librarians should view their users' perceptions and adoption of e-books within their academic communities as continually developing, rather than static

and steadfast. With these expected changes in user behavior and the inevitable improvements for e-book platforms, continued research in this area will benefit the profession.

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Appendix A

UMD Libraries E-Books Survey 2014

http://ter.ps/e-book2014
Q1. What is your status at the University of Maryland?
- Undergraduate student
- Graduate student
- Faculty
- Staff
- Research affiliate

Q2. If you are affiliated with a college or the University Libraries, please select it from the list below.
- College of Agriculture and Natural Resources
- School of Architecture, Planning and Preservation
- College of Arts and Humanities
- College of Behavioral and Social Sciences
- Robert H. Smith School of Business
- College of Computer, Mathematical, and Natural Sciences
- College of Education
- James Clark School of Engineering
- Philip Merrill College of Journalism
- College of Information Studies
- School of Public Health
- School of Public Policy
- University Libraries
- I am not affiliated with a college. (Please specify your unit below.)

Q3. If you are affiliated with a department, please select it from the list below.
[Drop-down list of departments]

Q4. How often do you physically enter a campus library?

Daily

- At least once a week
- At least once a month
- At least once a semester
- At least once a year
- Never

Q5. How often do you access online library resources (databases, e-journals, e-books, catalog)?

- Daily
- At least once a week
- At least once a month
- At least once a semester
- At least once a year
- Never

Q6. What is an e-book?

For the purposes of this survey, an e-book is a book-length publication in digital form. E-books can be read on dedicated e-book readers (for example, Kindle or Nook), personal computers, tablets, and some mobile phones. Note that electronic journals, newspapers, and full-text archives (for example, *Early English Books Online*) are not considered e-books for the purposes of this survey.

Q7. How often do you use e-books for academic purposes?

- Daily
- At least once a week
- At least once a month
- At least once a semester
- At least once a year
- Never

Q8. Please complete the following statement: Compared to three years ago, my use of e-books for academic purposes has:

- Increased
- Stayed the same
- Decreased

Q9. What devices do you use to read e-books? (Check all that apply)

- Kindle
- Nook
- Other e-reader
- Tablet
- Mobile phone
- Computer
- I don't use e-books*

Note: If "I don't use e-books" was selected, respondents skipped to Q15.

Q10. What is your PRIMARY source for the e-books you use?
- Commercial site (ex: Amazon, Barnes & Noble, Google e-bookstore)
- Free website (ex: Google Books, HathiTrust, Project Gutenberg)
- Public library website
- University of Maryland Libraries website
- Other, please specify

Q11. How do you find e-books that are available from the UMD Libraries? (check all that apply)
- Search the catalog or WorldCat
- Search within a specific e-book collection (ebrary, EBSCO e-book Collection, NetLibrary, Springer e-books, Safari Tech Books Online, etc.)
- Search for individual books in Research Port
- I don't use e-books from the UMD Libraries
- Other, please specify

Q12.   Which of the following e-book collections (available from the University of Maryland Libraries) have you used in the past year? (check all that apply)
- ABC-CLIO e-books
- Credo Reference
- ebrary
- EBSCO e-book Collection
- Gale Virtual Reference Library
- Handbooks in Economics (Elsevier)
- IEEE [Institute of Electrical and Electronics Engineers]/Wiley e-books
- OECD [Organisation for Economic Co-operation and Development] iLibrary
- Oxford Handbooks Online
- Safari Tech Books Online
- Springer e-books
- World Scientific e-books
- None of these
- I've used e-books from the UMD Libraries but I don't know which collection(s)
- Other, please specify

Q13.   When using e-books, how often do you:

[Choices: Never / Rarely / Sometimes / Most of the time / Always]
- Download to a device for offline use
- Read online (via a website, while connected to the Internet)
- Print all or a portion of the book?

Q14. In question 15, the formats [types of materials] are defined as follows:

Scholarly monograph: book-length, detailed study of a single subject, usually by a single author.

Edited collection: book on a single theme with one or more editors and chapters/essays on different subjects by different authors.

Conference proceedings: collection of papers from an academic conference.

General reference: Examples: *Oxford English Dictionary*, *Encyclopædia Britannica*, *World Almanac*, *Bartlett's Quotations*, etc.

Specialized reference: Examples: subject encyclopedias (e.g., *Oxford Encyclopedia of Economic History*), research guides (e.g., *MLA* [Modern Language Association] *Literary Research Guide*), handbooks and manuals (e.g., Merck manuals), etc.

Citation manuals and style guides: Examples: *Chicago Manual of Style*, *MLA Handbook*, *Publication Manual of the American Psychological Association* [APA], etc.

Q15.　Please indicate in what format you would prefer that the UMD Libraries purchase the following types of resources:

[Choices: I prefer print / No preference / I prefer e-books / It depends]

- Scholarly monographs
- Edited collections
- Conference proceedings
- General reference
- Specialized reference
- Citation manuals and style guides
- Literature (novels, short stories, poetry, etc.)

Note: Questions 16–22 only appeared for formats for which respondents chose "It depends" in Question 15.

Q16.　Please explain why you chose "It depends" for "Scholarly monographs" in Question 15: [Open-ended comments box]

Q17.　Please explain why you chose "It depends" for "Edited collections" in Question 15: [Open-ended comments box]

Q18.　Please explain why you chose "It depends" for "Conference proceedings" in Question 15: [Open-ended comments box]

Q19.　Please explain why you chose "It depends" for "General reference" in Question 15: [Open-ended comments box]

Q20.　Please explain why you chose "It depends" for "Specialized reference" in Question 15: [Open-ended comments box]

Q21.　Please explain why you chose "It depends" for "Citation manuals and style guides" in Question 15: [Open-ended comments box]

Q22.　Please explain why you chose "It depends" for "Literature (novels, short stories, poetry, etc.)" in Question 15: [Open-ended comments box]

Q23.　What, if anything, would make you more likely to use e-books for academic purposes? (Check all that apply.)

- If I owned a dedicated e-reader (for example, a Nook or Kindle).
- If I owned another device (for example, tablet or mobile phone) that could be used to read e-books.
- If e-books were easier to download to my device(s).
- If e-books were easier to find and access through the UMD Libraries website.
- If I had more training or knowledge on how to find, access, download, or use e-books.
- If e-books from commercial vendors (for example, Amazon) were less expensive.
- If there were more e-books available in my area(s) of research interest.
- If there were more e-books available in the non-English language(s) I read and/or study.
- If more of my course textbooks were available as e-books.

- If e-books were easier to print.
- If e-books were easier to highlight and/or annotate.
- If I knew more about how to cite information found in e-books / If the citation format(s) I use had better guidance for citing e-books.
- If e-books worked with my screen reader (or other adaptive technology for users with disabilities).
- If e-books were technologically improved (for example, better screen resolution, less reflective reading surface, longer battery life, etc.).
- If more e-books were available without digital rights management (DRM) restrictions.
- Nothing. I already use e-books extensively or exclusively for academic purposes.
- Nothing. I will always prefer print books to e-books.
- Other, please specify:

Q24. Please share any additional comments or suggestions on e-books at the University of Maryland Libraries.

[Open-ended comments box]

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Appendix B

Coding for Open-Ended Questions

*Unless indicated with an asterisk, codes are identical to those used for data analysis in 2012.

Questions 16–22: Please explain why you chose "It depends" for "format type" in Question 15:

Access: Respondent prefers whichever format is easiest to access, for example, print if he or she is already in the library, but e-book if he or she is online.

Both: Respondent would prefer to have both formats available.

Citations: If the respondent expects to cite material from the book, he or she prefers print because citing e-books without page numbers can be difficult.

Cost: Respondent prefers whichever format is cheaper.

E-book features: Respondent prefers e-book features, such as full-text search, convenience, and the like.

E-book for scholarship: Respondent prefers to use e-books for scholarly reading and, vice versa, would rather have print books for leisure reading.

Formatting: Respondent indicated that e-books were preferred if the print formatting was preserved and the e-book was error-free.

Illustrations: Respondent prefers print versions of books containing illustrations.

Lack of familiarity: Respondent was unable to make a determination due to lack of familiarity with the type of resource or the e-book format. Some respondents claimed it depends on the content, topic, area, and the like.

Length (in general): Respondent indicated that the length of the resource would influence which format was chosen but did not specify which format was preferred for any given length.

Long passage prefer e-book/Long passage prefer print book: Some respondents indicated they would select an e-book when reading lengthy passages or a full book but would rather have print when reviewing short passages. Others declared the opposite—that is, they would rather have a printed book when reading lengthy passages or a full book but would prefer an e-book when reviewing short passages.

Mark-up: Respondent preferred print to be able to physically mark up the text (underline, highlight, add marginal notes, notate, and so on).

Navigation: Respondent indicated that it was more difficult to "flip through" an e-book to the notes or other sections, and therefore preferred print.

Ownership: Respondent preferred to purchase and own hard copies of some titles but would favor e-books for titles he or she does not intend to keep.

Personal reasons: Respondent cited a personal reason, such as mood or feeling at the time, reading experience, or tangible things, for the selection of print versus e-book.

Print for scholarship: Respondent preferred to use print works for scholarly reading and, vice versa, liked e-books for leisure reading.

*Frequency of usage: Respondent preferred printed version if he or she believes it requires in-depth reading and he or she will use it frequently.

*Easy to copy: Respondent preferred whichever is easy to copy.

Question 24: Please share any additional comments or suggestions on e-books at the University of Maryland Libraries.

Already use e-books: Respondent is already using e-books for leisure reading, research, or both. For example, "I love my e-book readers and I take them everywhere"; "I use them avidly for leisure reading."

Citation: Respondent reported lack of page numbers or lack of standards for citing e-books as a reason for not using them more. For example, "Consistency in page number[s]"; "If citation and page markings in e-books corresponded to their printed versions."

Convenience: Respondent indicated "Convenience" (without any further explanation) or mentioned portability of e-books, ability to access them without going to a library, or 24/7 accessibility.

Depends on text: Respondent indicated a willingness to use e-books for certain purposes or with certain kinds of texts. For example, "I prefer e-books for shorter passages and print for larger ones"; "I prefer only to use them for reference"; "Books that I am unlikely to read more than once, but are not being used for research purposes."

Don't like e-books / Prefer print: Respondent indicated a general preference for print books or a dislike of e-books, or said that he or she would only use e-books if there were no print equivalent available. (For example, "KEEP HARD COPIES. NO E-BOOKS!!!!!!!!!!" or "I like holding a physical book, newsletter, article, etc. in my hands and turning the pages.")

Ease of access / use: Respondent indicated that e-book use would increase if electronic books were more user-friendly or declared that e-books are currently difficult to find, access, or use. For example, "If they were easy to find and access through the library website," "An incredibly friendly way to use them, more advanced than what is out now." Note: Also includes respondents who answered "Accessibility," though this response could also refer to greater availability (having larger numbers of e-books available).

E-book reader: Respondent would more likely use or read e-books if he or she owned an e-book reader (Kindle, Nook, or the like). Some answers mentioned iPads in obvious reference to the survey prize, for example, "If I won an iPad!"

Environment: Respondent indicated a preference for e-books over print books because e-books do not use paper and are therefore more "sustainable."

Features: print / highlight / annotate / search: Respondent would more likely use e-books for specific features, or if specific features were available. Respondents most frequently mentioned the ability to easily print, highlight text, annotate or write in margins, and search for specific words or phrases. Note that three of these features—highlighting, annotation, and searching—are available in existing e-book formats, while printing remains prohibited or problematic for most e-books.

Greater availability: Respondent indicated a wish for a greater number or wider selection of available e-books, for example, "More choices." Also includes participants who indicated a desire for specific formats (such as "magazines," "research articles that are peer-reviewed," "audiobooks") or subjects ("literary theory," "linguistics," "biographies," "recreational reading," and the like).

Languages: Respondent indicated a wish for greater availability of e-books in foreign languages generally or in specific languages (such as Spanish).

Lower cost or free: Respondent indicated that use of e-books would increase if they were free or cheaper than the print equivalent. Note that many responses seemed to conflate e-books with e-book readers, and it was not always possible to tell whether the individual means "if e-books were cheaper" or "if readers were cheaper." Other participants did not seem aware that the library lends e-books and e-book readers free of charge—for example, "E-books would be more feasible if there were not as many fees involved with using them, or if the readers were more affordable."

No response: No response or unusable response, for example, "Yes"; "If they made me fly."

Nothing / not sure: Respondent indicated "Nothing" or "Not sure" with no explanation.

Plan to use them more: Respondent indicated that he or she is currently not using e-books but has no objection to using them or will use them more in the future.

Publicity/training/didn't know about e-books: Respondent reported lack of awareness regarding library holdings of e-books, need for the UMD Libraries to do more publicity about e-book collections, or a willingness to use e-books if he or she had more knowledge of how to use them—for example, "Clear information about how to use. More publicity would help . . . I never even knew these were available."

Technology improvements: Respondent mentioned specific improvements to e-book formats or readers that would make him or her more likely to use them—for example, clearer screens for less eyestrain, higher quality, open formats with no restrictions on what the user can do because of digital rights management (DRM).

Textbooks: Respondent would more likely use e-books if more textbooks were available in e-format. Also includes participants who indicated that professors do not allow e-readers, laptops, and similar devices in the classroom, thereby inhibiting use of e-books for course texts.

Work with my device: Respondent would more likely use e-books if they were in a more compatible format (for example, pdf) or one that worked with a specific device (such as Kindle, Nook, iPad, or iPhone). Many respondents took this opportunity to reiterate their attitudes regarding e-books, with responses similar to those for Question 17. Therefore, we could use many of the same categories for the answers to Question 18. A few additional categories were required to capture all the responses:

Acceptance: Respondent prefers print but recognizes that e-books will likely become more prevalent in the future and therefore is willing to adapt.

Both: Respondent indicated that he or she would prefer to have books available in both electronic and print formats (for example, print is easier to read, but e-books are easier to search so I would like to have both options).

General positive response: Respondent expressed a favorable opinion of the UMD Libraries, their services, or the survey itself.

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