What Customers Want from Kindle Books

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Ever since Oprah espoused them on network TV in October of 2008, Kindle[1] e-book readers have sparked wild interest in owners and potential users of Kindle books.

With ambiguous Kindle book[2] licensing issues still to be settled, the National Institute of Standards and Technology's (NIST's) Research Library has not yet decided how it will use the new e-book reader technology. But we do want to be ready to go once the dust settles around the question of the permissibility of circulating Kindles and their proprietary content, "Kindle books" in libraries. The authors are two reference librarians who have just finished gathering and compiling customer input to gauge customer preferences for three different e-reading devices for Kindle books—the Kindle 2, the larger Kindle DX, and Apple's iPod Touch (or, interchangeably, the iPhone—both read Kindle books in the same way).

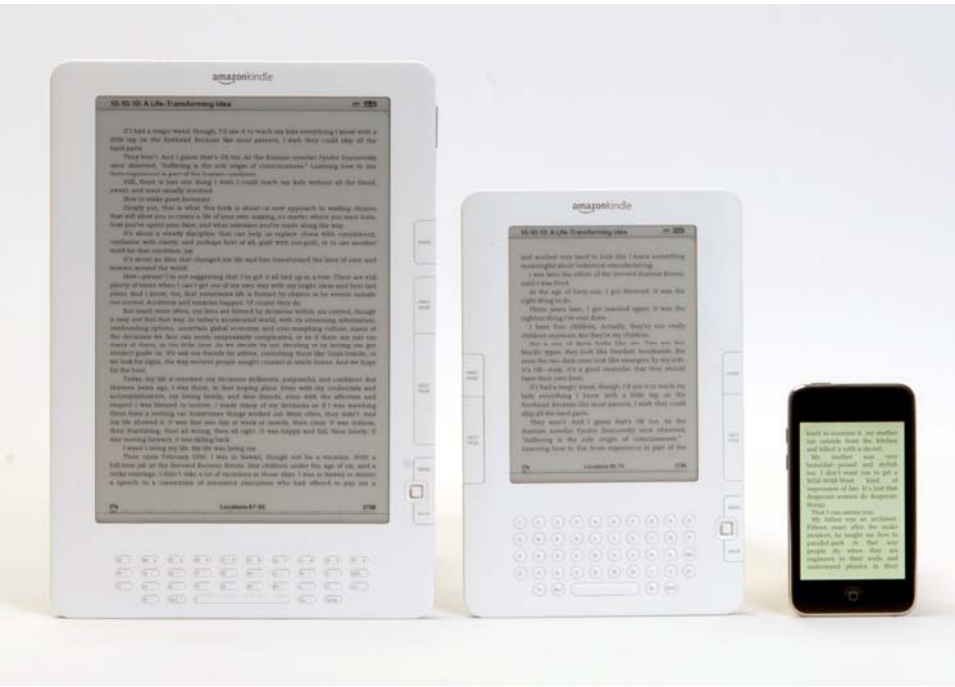

Figure 1. Left to right: Amazon Kindle DX, Amazon Kindle 2, and Apple iPod Touch

[1] The identification of any commercial product or trade name does not imply endorsement or recommendation by the National Institute of Standards and Technology.

[2] "Kindle book" in this article is used to refer to actual e-book content produced by Amazon for the purpose of being read either on a Kindle device or on an iPod Touch or iPhone by means of the iPhone app.

NIST's Gaithersburg, Maryland staff of approximately 3 000 scientists, researchers, and support personnel works to support manufacturing and industry by advancing the nation's technology infrastructure. The three story science and engineering library has a collection of approximately 300 000 volumes and 1 300 (mostly electronic) journal subscriptions.

This article describes what we learned from two focus groups made up of scientists, engineers, and administrative staff when asked which e-book device they preferred for their work-related reading, and why. It highlights what the participants felt were important device features as well as the *types of materials* these customers said they would want to use an e-book reader for.

Device	Capacity (GB)	Screen size (diag")	Screen technology	Weight (oz)	Native PDF capability	Touchscreen	Note-taking	Battery life - wireless off
Kindle2	2	6	E Ink[3]	10.2	No	No	Yes	Weeks
Kindle DX	4	9.7	E Ink	18.9	Yes	No	Yes	Weeks
iPod Touch/iPhone with Kindle book app	16 or 32	3.5	Backlit LCD	4.05	No	Yes	No	Hours

Figure 2. Device features

Why Kindle books focus groups

For several months, customers had been asking whether we would be adding Kindles to our collection. When in April 2009 a new iPhone application was introduced that made it possible to read a Kindle book on an iPhone or iPod Touch, we decided to test well-known Kindle book reading devices. Our collection already contained ten iPod Classics and Touches, mostly for listening to business and management audiobooks.

We ordered a 16GB iPod Touch, a standard-sized Kindle 2, and the brand-new, larger Kindle DX. Please note that there are plenty of e-book readers manufactured by other manufacturers. They support different file types and provide different features from these Kindle book reading devices. We decided to try out these particular devices because they have the greatest brand recognition with our customers and are probably the "sexiest" of the available e-book reading devices today.

Although we know our customers well, the types of materials they would typically read on an e-book reader are different from the materials we as librarians typically select for the collection. We therefore felt that focus groups of customers would best help us identify not only the reading devices that would be most appropriate for the Library to select down the road but also the content that would have the greatest appeal to our customers. So we organized focus groups to try out the Kindle book devices and voice their opinions. We loaded the three Kindle book devices with some full and some sample versions of different types of content (e-books, PDFs of journal articles, book chapters, drafts of papers needing review, etc.) so that focus group participants could become familiar with the look and feel of that content using the various devices.

We recruited volunteers to ensure that we'd harvest opinions from those most likely to use e-book readers—such as those who ride a train or bus daily and want to take advantage of their commuting time, or early adopters with a keen interest in the new e-book technology who might want to try before they buy. We limited each focus group to 3 to 5 people so that participants would have plenty of opportunity to try out all three new devices in an hour.

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[3] E Ink is a display technology that mimics the appearance of ink on paper

Customers' favorite devices

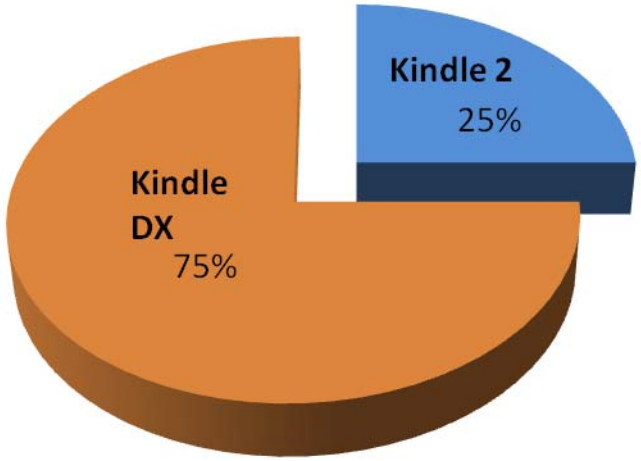

Figure 3. Which device would you prefer to use for your work-related reading?

Participants asked questions and discussed features of the devices during the focus group meeting; in addition, each completed a brief questionnaire at the end of the meeting to be sure we'd receive all observations and comments. Six of the eight participants said they preferred the Kindle DX for reading work-related documents. Two preferred the smaller Kindle 2. None preferred the iPod Touch.

Device	Pros	Cons
Kindle 2	Light in weight Convenient size Integrated dictionary Changeable text size	Can't read PDFs Text may fade when page turned in sun Page locations instead of numbers
Kindle DX	Ability to read PDFs Large screen Easy to read Good figure detail Integrated dictionary Changeable text size	Text may fade when page turned in sun Page locations instead of numbers
iPod Touch/iPhone with Kindle book "app"	Fits in pocket Fast page-turning Intuitive Changeable text size Changeable text color	Can't read PDFs Hard to read in sun Must plug in to read for hours Page locations instead of numbers

Figure 4. Device features our customers felt were most important

The six participants who preferred the Kindle DX (9.7" diagonal screen, 18.9 oz) cited these four features as being important:

- Device can read e-journal articles and personal Portable Document Format (PDF) documents of other electronic papers
- Large screen shows good figure detail
- Large screen is easy to read
- 4 GB capacity--can hold 3500 books so no need to ever have to delete any (note: the other two devices also have relatively large capacities. Kindle 2's capacity is 2 GB or 1500 books; iPod Touch is 16 or 32 GB! We question whether storage capacity is as important a feature as customers seem to think).

The two participants who preferred the Kindle 2 (6" diagonal screen, 10.2 oz) liked its convenient size and light weight.

Please note that the Kindle 2 and iPod Touch can read converted but not native PDFs. The Kindle DX is the only device of the three which is able to read native PDF documents (the iPod Touch can read PDFs outside of the Kindle book "app," but our customers did not evaluate this separate procedure). As we were loading the e-book readers with content, we discovered PDF conversion processes made available both by the device manufacturers and others; since these frequently did not preserve a document's formatting properly, we did not to ask participants to read converted documents on the Kindle 2 and iPod Touch.

What customers wanted to read

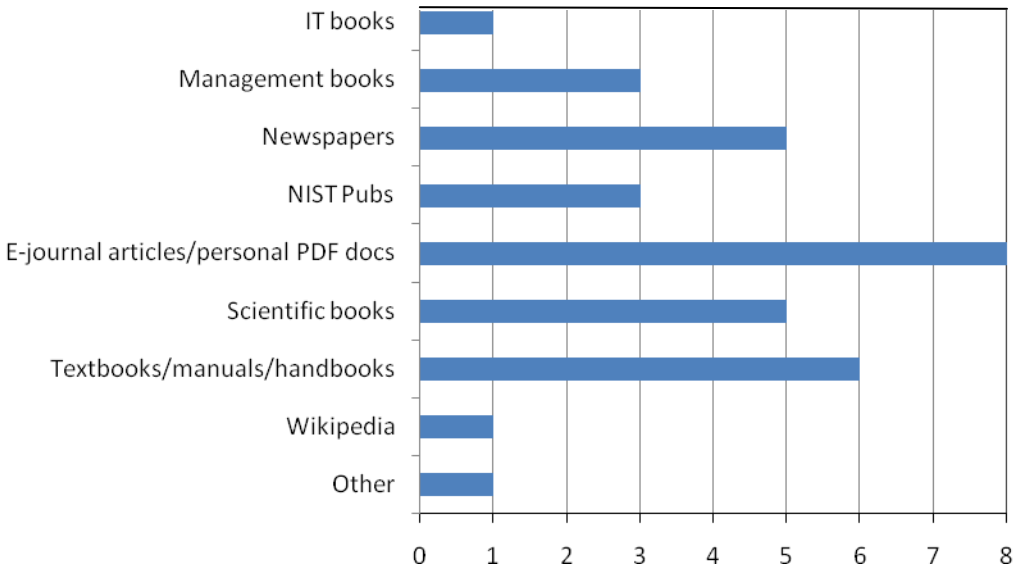

Figure 5. Which types of work-related materials would you want to read on the device?

Participants were permitted to select multiple contents. All eight said they'd want to read e-journal articles (predominantly PDFs in our library) and personal documents (primarily PDF drafts of papers needing review) on the device. Interestingly, this included the two participants who said they preferred the smaller Kindle 2 which does not have the ability to read PDFs. Perhaps a Kindle device of similar size will include PDF capability in the future, although the smaller screen will require a way to zoom in to see any PDF figures clearly.

Following e-journal articles and personal PDF documents, participants said they would want to read, in order of decreasing popularity, textbooks/manuals/handbooks, scientific books, and newspapers.

At the very bottom of the list in descending order of popularity among participants were information technology books, Wikipedia, and undefined "other" documents.

Selected customer comments

In addition to answering standardized questions about device and content preferences, focus group participants included general comments when completing their questionnaires. We also recorded their observations as they used and discussed the devices.

Battery life: The Kindle 2 and Kindle DX's "E Ink" electronic paper display (produced by tiny electronically charged bubbles) has a low energy requirement and facilitates extremely long battery life. Our iPod Touch's little battery icon showed battery life to be half-consumed after an hour of intense focus group use. It is possible that it wasn't completely charged at the start, although the display icon made it appear fully charged at that time.

Display in sunlight: The Kindle 2 and DX screens were easy to read in sunlight. However, where direct sunlight shone on the display, as a page was "turned," sections of text sometimes faded. This is a known problem with all E Ink readers. This problem could be alleviated by turning the device over as a page was turned so that the sunlight did not shine directly on the screen, but that made turning pages more awkward. The iPod Touch's LCD screen was legible but a bit difficult to read in direct sunlight; some participants felt they were straining their eyes to read these screens in the sunlight.

Page vs. location numbers: All of the devices used page "locations" rather than page numbers. A single page displayed on a Kindle 2 screen can encompass as many as 10 page locations. These page locations have no relationship to the page numbers of a printed copy of the book. This makes it necessary to get hold of a print copy if you need to cite text in the book.

Organizing books on e-reader: One of the biggest challenges for all of the devices reading Kindle books was organization of the books. All the devices held over 1 000 books. However, they all had only three sorting options—by author, by title, and by date added. The devices did not provide any option for creating collections, or subsets, of materials. Many of the focus group participants saw the lack of this option as a big detriment. For example, they wanted to be able to group all their electronic journal articles together, separate from books, and separate from newspapers.

Fewer features for reading PDFs: Some of the key draws of the Kindle devices are their integrated dictionary, their ability to annotate Kindle books, and their ability to change text size. However, these features are not available for native PDF files (chiefly e-journal articles and personal documents) on the Kindle DX, the one device that can read them. These native files were displayed on the DX as images and could not be annotated. The size of the text or figures could not be changed other than by turning the device 90 degrees to make the screen display larger. Even then, the text of a standard 2-column technical paper was still quite small. While the text of native PDFs was searchable, the integrated dictionary did not provide word definitions.

PDF title display: Kindle books purchased from Amazon had clear metadata that displayed the author and title of each book on the device's home screen. However, the same was not true of PDFs. What showed as a title for a PDF (on the Kindle DX) depended upon the metadata the creator had entered and had no relationship to the file name. Since most of the PDF files available today are from electronic journal publishers and do not contain full metadata, this resulted in cryptic displays such as "jox2543" on the home screen, which really did not help the reader to identify the document. In order to change the title displayed for a PDF, the reader would have to go into each file using Adobe Acrobat and modify the metadata.

No Perfect Reader

It is clear from the results of these focus groups that the "perfect" e-book reader has yet to be invented. Kindle book devices and content held tremendous appeal for the participants, however. Anyone who needs access to PDF documents will have greater requirements and for now at least will want to use the Kindle DX.

We may also look beyond the Kindle readers in the future, given the appeal for PDF documents.The newly released Sony Portable Reader Touch Edition, PRS 600, can not only reformat PDF documents to increase the text size for easy readability, but can also zoom in on PDF documents in their native format. And Barnes and Noble's nook, set to be released soon at the time of writing this article, also reportedly will reformat PDF documents to increase the text size for easy readability. Both of these devices have a 6-inch screen and will combine the e-reader traits valued most by our participants.

Using focus groups to explore new e-book reader technologies allowed the library to make a minimal initial outlay to purchase devices and content. It permitted the use of small, controlled groups with which librarians could easily spend time to discuss likes and concerns and to gather detailed customer responses. Using the devices was a wonderful learning experience for the library as well as for its focus group customers. Whether it ultimately turns out that Kindle book devices and contents may legally be circulated by libraries or not, these focus groups revealed important customer requirements. In particular they underscored the importance of being able to read native PDF documents for e-book customers in the world of business and research.