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Article

Academic Library Staff and E-readers: Understanding Adoption, Rejection, and Service Development

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Abstract

In August 2011, a cohort of 30 Oregon State University Libraries and Press librarians and staff received free e-readers (Kindle Keyboards, Nook Simple Touches, Kobo Touches, and Sony PRS-350 Reader Pocket Editions) to use and adopt as they wished. In return, they were asked to participate in a year-long study exploring factors influencing their decisions to embrace or reject the e-readers.

By removing barriers to trialing e-readers, investigators sought to: 1) understand the difficulties and hurdles encountered when adopting and using an e-reader; 2) explore factors that influenced library faculty and press staff to embrace or reject e-reader technology; and 3) learn if the experience of trialing e-readers would lead to enhanced services. The investigators used Everett M. Rogers' innovation-decision process as a theoretical framework to analyze participants' e-reader adoption. Key findings confirm that trialing new technology is crucial to determining if the technology fits an individual's needs and is necessary to inform the development of library services and professional knowledge.

One must learn by doing the thing; though you think you know it, you have no certainty until you try.

Sophocles, 400 B.C.

While American adults' e-reader ownership has risen from 6% in 2010 to 12% in 2012 and now 26% in 2013 (Pew Internet, 2013), the Oregon State University Libraries and Press (OSULP) did not see an equivalent rise in patron e-reader questions during this same time. This, combined with the realization that OSULP librarians and staff were not talking about e-readers and their attendant issues, prompted a small group of librarians to investigate this seeming anomaly among their colleagues, a convenient study population. E-reader technology was not new to OSULP staff (or patrons) as they had implemented a heavily-used Kindle e-reader circulation program in 2009.

Beyond exploring adoption or rejection of e-readers, the investigators surmised that study participants would benefit from hands-on, practical knowledge of e-readers which could, in turn, lead to the development of services and support for OSU Libraries patrons and OSU Press customers. Participants' e-reader use over a 12-month period was investigated and findings analyzed using Roger's (2003) innovation-decision process. Previous studies of academic librarian e-reader use have not directly linked the experience to the development of patron services or analyzed data within the theoretical models of innovation adoption or technology use.

Literature Review

While libraries with technology-lending programs often provide e-reader lending to their staff, many offer little or no additional training. Certainly this was the case at OSULP. A likely assumption is that these technologies are intuitive and that participation in a "petting zoo" is sufficient exposure. However, several recent reports and studies highlight the need for training or hands-on experience to fully understand the various hurdles encountered when using an e-reader to access library materials.

In their Pew Internet report, *Libraries, Patrons, and E-books*, Zickuhr, Rainie, Purcell, Madden, and Brenner (2012) include responses from 2,256 library staff and note that "with so many patrons relying on library staff to troubleshoot their e-reading devices, the issue of training staff members themselves on those devices is an important one…" (p. 45). Positive staff training experiences involved "extensive" hands-on, including practice time at their homes. Some respondents also cited their personal use of e-readers as useful in helping patrons. Negative responses were tied to disorganized training, out-of-date training materials, fast-changing technology, and training that did not include hands-on experience with e-readers.

In 2011, several Colorado academic institutions and one public library district reviewed the current state of the e-book/e-reader industry; their efforts resulted in specific education recommendations for all stakeholders. In the area of services the report noted

“unlike some technologies, e-readers are not always intuitive… staff…should be trained in the use of e-readers and how to help patrons as a continuing education activity and that institution-specific help guides should be developed for the patrons…” (Joint eBooks Reader Committee, 2011, p. 11). Kathy Robins, a public librarian in Billings, Montana concurred “…librarians need to be familiar with the hardware [e-readers]. And if we can’t assist them then we’re going to miss a lot of service opportunities for the patrons” (Kelley, 2011 "Opportunities to provide patron service," para. 2). A 2010 mobile technologies pilot at the University of Maryland Libraries generated the observation that its “libraries need a venue for individuals (i.e., staff) to try out and discuss emerging technologies in a safe, non-threatening environment” (Saponaro, Wray, Zdravkovska, & Münster, 2010, p. 1).

A 2008 Texas A&M study gave library and university staff the opportunity for hands-on experience with e-readers. The participants included thirty-six librarians, library staff members, and a few university faculty members. Each participant received $100 to spend at Amazon and was loaned a Kindle for at least one year (Clark, Goodwin, Samuelson, & Coker, 2008). Participants were asked to turn in receipts for each item purchased. During focus groups following the first month of use, users expressed frustration with limited content availability, poor graphic displays, and licensing issues. Half of the participants believed the print book would never be replaced by the Kindle and none of the participants indicated they would purchase a Kindle (in 2008 the Kindle cost $400).

In a 2009 Simmons College study, two Kindles were purchased and loaned to ten librarians for up to two weeks at a time (Rodzvilla, 2009). Popular fiction and non-fiction e-books were pre-loaded onto the Kindles, and librarians were asked to read at least one book. At the conclusion of the academic-year study, librarians were asked to share their opinions about their experiences with the Kindles. Complaints included a non-intuitive and confusing user interface, poor display of journal articles, and lack of a touch screen. Most of the participants said they would not purchase an e-reader for personal use.

Both of the previous studies about librarian e-reader use tested only Kindles and lent the e-readers rather than giving participants permanent ownership. In contrast, the OSULP study used four different e-reader brands, gave participants permanent ownership of their e-reader, and allowed them to load whatever content they wanted onto the e-reader without requiring disclosure of titles. These aspects of the study were designed to provide an authentic user experience because e-readers, like many other mobile technologies, are designed for personal, highly-customizable use. The investigators felt that device-sharing and content-disclosure could discourage study participants from having a fully authentic experience.

Methodology

This study was conceived as a way to raise awareness of e-reader technology, give staff participants the opportunity for authentic trialability, and learn if participants' innovation-decision process would result in the development of e-reading-related patron services. Specific research objectives included: 1) understanding the difficulties and hurdles participants encountered when using an e-reader; 2) exploring factors that influenced participants in their decision to adopt or reject e-reader technology; and 3) understanding how knowledge of e-reader technology could or would lead to enhanced library or press services. Objectives 1 and 2 will be explored in the context of the innovation-decision process while Objective 3 will be addressed separately.

A strong focus on understanding participant e-reader adoption (or rejection) led this study's investigators to focus on diffusion research which attempts to explain how and why new innovations spread, whether it is an e-reader or hybrid seed corn (the focus of early diffusion studies). The investigators identified the innovation-decision process, an important feature of Rogers' 1962 general diffusion model (Rogers, 2003), as the theoretical framework around which the study was developed and the results analyzed. Rogers (2003) identified five stages which adopters of innovations pass through (though not always consciously and not always hitting each one): knowledge, persuasion, decision, implementation, and confirmation. Central to the decision process is the concept of trialability which refers to "the degree to which an innovation may be experimented with on a limited basis" (Rogers, 2003, p. 258); the more an innovation is able to be trialed, the more likely it will be adopted.

Study and Methods

The four authors of this article were awarded a competitive, internal library grant which paid for the e-readers used in the study: eight Kindle Keyboards (Kindle), eight Nook Simple Touches (Nook), seven Kobo Touches (Kobo), and seven Sony PRS-350 Reader Pocket Editions (Sony). These devices were identified as holding the majority market share at the study's outset and thus the readers most likely to be used by library patrons. All four featured black and white e-ink, the ability to store a large number of files and were designed primarily for mobile reading. Only the Sony did not offer wireless downloading and only the Kindle did not have a touch screen. Table 1 provides an overview of selected features.

Table 1. Selected E-reader Features

Device	Wireless	Touch Screen	EPUB File Compatibility	PDF File Compatibility
Kindle Keyboard	Yes	No	No	Yes
Kobo Touch	Yes	Yes	Yes	Yes
Nook Simple	Yes	Yes	Yes	Yes

Touch				
Sony Reader Pocket	No	Yes	Yes	Yes

Study participants were recruited from among the OSU Libraries' professional and tenure-line faculty and the OSU Press staff because they have responsibility for developing and implementing both routine and innovative products and services and should have familiarity with how new technologies impact OSULP's operations. Senior library administrators and the remaining staff were not recruited due to limited study funds.

The final study population consisted of 30 participants (9 men, 21 women). Each study participant was randomly assigned to keep and use one of the four e-reader models. Participants who already owned an e-reader were assigned a different brand than what they owned. The investigators grouped participants based on assigned e-reader models. Each investigator selected an e-reader and conducted all interviews for the participants in that e-reader group.

Data Collection and Analysis

The investigators conducted four qualitative research interviews over twelve months (September 2011, October 2012, February 2012, and August 2012) to gather participants' explanations and understandings of their e-reader adoption or rejection experience. Participants received their e-readers upon conclusion of the September 2011 interview (Interview 1). Interview questions generated both quantitative and qualitative data.

Each interview had a slightly different focus. Interview 1, a pre-study interview conducted before participants were given their e-readers, focused on exploring past experiences with e-readers/e-books, understanding expected hurdles and current knowledge of or importance of e-readers in personal daily work, and gathering details on current reading habits. Interview 2 focused on exploring hurdles encountered, changes in current awareness around e-readers, and gathering e-reader use details. Interview 3 focused on exploring current awareness of the e-reader/e-book industry, understanding continued challenges with using e-readers, and gathering e-reader use details. Interview 4 revisited current reading habits and focused on exploring changes in thoughts about e-readers and their role in providing services, on understanding preferences for print reading or e-reading, and on gathering demographic data.

The investigators audio-recorded each interview and transcribed all interviews for their e-reader group prior to analysis. The investigators utilized the qualitative data analysis software, Nvivo, to analyze qualitative data, while Excel spreadsheet software was utilized to analyze quantitative data. Qualitative data were coded using inductively-derived categories (categories found in the data itself). All four investigators met to compare individual coding for sample questions and to agree upon a unified coding

scheme which was then used by two of the investigators to analyze all qualitative data.

The investigators based final adoption and rejection decisions on two factors: 1) participants' responses to a specific adoption query, and 2) participants self-reported adoption status being congruous with their behavior (e.g., downloads) and responses over the course of the study. In essence the investigators assessed the extent to which "a series of decisions aggregate[d] toward the same conclusion" (Eveland, 1979, p. 7).

Findings & Discussion

Stage One: Knowledge

Rogers' (2003) innovation-decision process begins with knowledge of an innovation, an important first step in the larger process of deciding to adopt an innovation. Study participants were generally aware of e-reader technology, though Amazon's Kindle e-reader dominated their awareness. The 27% of participants who owned e-readers all owned Kindles. Participants who didn't own e-readers also referenced the Kindle saying, "I have touched a Kindle twice that belonged to somebody else but only for a very short duration…" or "I've checked out one of ours [Kindle e-reader] here and used it a little bit…" Others had tried the Kindle app like this participant who reported that "my main experience has been on my iPod touch using the Kindle app." This finding was not too surprising given *Publishers Weekly* report noting that 55% of e-book buyers were using one of the Kindle family of devices to read their e-books (Milliot, 2012). Brand dominance was so pervasive that participants did not mention any other dedicated e-reader brand.

This awareness largely did not translate to e-reader experience. While pre-study e-reader ownership rates were significantly higher than those reported by Pew Internet (Purcell, 2011), 73% of OSULP participants did not own a dedicated e-reader and several had no experience at all. One participant acknowledged "Well, I downloaded some e-books off of our website with varying success but I don't have any [experience] with an e-reader."

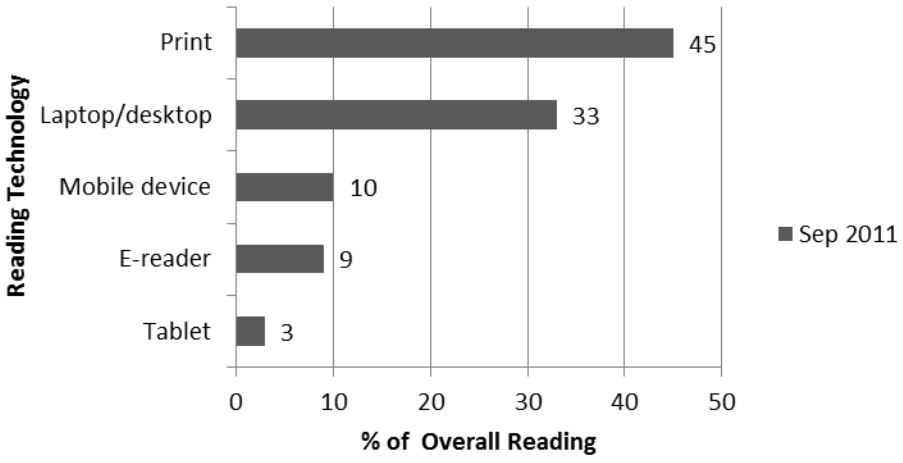
Rapid changes in consumer technology make keeping pace a challenging and potentially expensive endeavor, however technology that changes how library patrons or press customers access and consume content is worthy of considerable attention and understanding.

Stage Two: Persuasion

It is during the persuasion stage where a "favorable or unfavorable attitude" (Rogers, 2003, p. 175) toward the innovation is formed. In Interview 1, participants were asked to provide a breakdown of their combined personal and work non-email reading which gave context for understanding their attitudes towards e-readers and their potential to be persuaded to adopt. They were also queried about the importance of e-readers in their work and why they had not purchased an e-reader prior to the study.

Print reading (books or article printouts) dominated participants' overall work and leisure reading behavior with 45% of pre-study reading occurring with print materials (Figure 1). Participants engaged in substantial e-reading; 33% of pre-study reading was on laptop or desktop computers. However e-reading on an e-reader or mobile device comprised very little of overall non-email reading and was consistent with the low rate of e-reader ownership among study participants.

Figure 1. Pre-study Reading (excluding email)



Ninety-three percent of participants noted it was important to know about e-readers for their work and their attitude toward the devices was positive, but only 40% had encountered work situations where knowledge of e-readers would have been useful. Very little in the majority of participants' work lives persuaded them to move further along in the e-reader adoption decision process prior to the start of the study.

Both concern with cost of e-reader ownership and their ability to borrow books for free emerged as dominant reasons for not previously purchasing an e-reader; 50% of participants who did not previously own an e-reader cited one or both of these factors as reasons for non-ownership. Along with these reasons, other factors such as love of the print book, desire for a multifunctional device, rapidly changing technology, and general technology aversion emerged as reasons participants did not pursue e-reader ownership prior to the study.

With so many factors discouraging participants from purchasing and adopting e-readers on their own, the most enticing factor in recruiting participants for the study was the characteristic of trialability. To encourage participation, all barriers to trialability were removed: there was no e-reader cost associated with participation, there was no minimum usage requirement imposed, and there was no requirement to disclose what was read. Anecdotally most participants were excited to be receiving their e-reader and

an atmosphere of “Christmas in mid-summer” pervaded the week or two when e-reader distribution occurred at the conclusion of Interview 1.

Stage Three: Decision

Rogers (2003) characterizes the first three stages of the innovation-decision process, up to and including the decision stage, as a “strictly mental exercise of thinking and deciding” (p. 179). Providing the opportunity to own an e-reader helped those who had not owned one previously to move away from earlier active or passive rejection decisions (Rogers, 2003). Even at this mental exercise stage, the decision to participate in the study was considered a move toward e-reader adoption.

At this initial stage, participants expressed overall confidence that they would be successful with using their new e-readers. The average perceived difficulty of using the e-reader measured 1.8 (Likert scale: 1=not at all difficult; 5=extremely difficult). This is not to say that participants did not expect hurdles; they did. A participant who said “I think the first hurdle will be [the] cost of books [and] finding books that I want to read” echoed the sentiments of a number of participants who wanted to find free content and were not sure where to look for it. Concerns about getting content onto the device also surfaced as noted by this participant who commented “I think the thing that I'm expecting is to run into trouble loading PDFs…I expect to have to jump through some hoops to get those loaded on. Certainly that was my experience with the Kindle.” This is an example of a participant projecting past experience with previous technology onto the new device.

Stage Four: Implementation

The implementation stage comes when an innovation is put to use (Rogers, 2003). This stage constituted the bulk of the study, and the active trialing of e-readers was an important factor in participants’ individual adoption and rejection decisions. Two main themes came out during this period: 1) participants experienced numerous challenges with learning to use e-readers, and 2) participants pursued leisure reading over scholarly reading.

E-reader challenges.

When learning to use their e-readers, participants faced a variety of hurdles (Table 2) that ranged from difficulty with finding and accessing content to annoyances with promotions and advertising pushed to Kindle users.

Table 2. Hurdles Encountered During E-reader Trialability

Hurdle	***Example***
Finding content	*“I found a book finally. Finding something [in the OSULP catalog] that was really an e-book proved to be harder than I expected.”*

Accessing content	*"And I couldn't find one [e-book] that would work with the Kindle."*
Transferring/ syncing content	*"It downloaded to my computer, but not to my e-reader, and I didn't know what to do at that point."*
Getting device going	*"Figuring out how to navigate in the thing was frustrating. And the display was not immediately intuitive."*
Instructions/getting started	*"The instructions that come with the device tell you only how to charge it and turn it on. It has nothing to do with how you download anything."*
Preconceived ideas	*"Some part of me just assumed it was wireless because I just thought, of course it's going to be wireless."*
Using content on device	*"It was a PDF, so I had an issue with making it larger to read and then having to move around sideways and up and down to read it. Not fun."*
Promotions	*"It's annoying that when you finish a book, it tells you if you like this one then maybe you want to buy this one. That is a commercial experience. That when you turn it off there is always an ad on it."*

In general these findings supported the results of other e-reader studies (Clark et al., 2008; Rodzvilla, 2009; Thayer et al., 2011) but also served to highlight the vital role that trialability played in OSULP staff learning to work with innovative technology such as the e-reader. One important outcome was that participants gained a fuller understanding of the hurdles that e-reader-owning patrons or customers might encounter.

The hurdles that participants encountered in using their e-readers was reflected in the repeat measurement of perceived difficulty of using the e-reader which rose from 1.8 to 2.3 after just the first month of the study. Unfortunately this rating was not gathered again at the conclusion of the study. Although the change in difficulty rating was not large, the significance of the difficulties and frustrations encountered by participants should not be underestimated. As was pointed out earlier, technology used for work (or otherwise) is not always intuitive.

Leisure reading.

As participants trialed their e-readers by actively downloading content over the study year, leisure reading material was the content of choice. Public library book downloads together with book downloads from other providers was 24% higher than downloads categorized as news and scholarly articles and manuscripts (Figure 2). Though only a proxy for the amount of actual reading that occurred via the e-reader, downloads did serve as a convenient measure of active use.

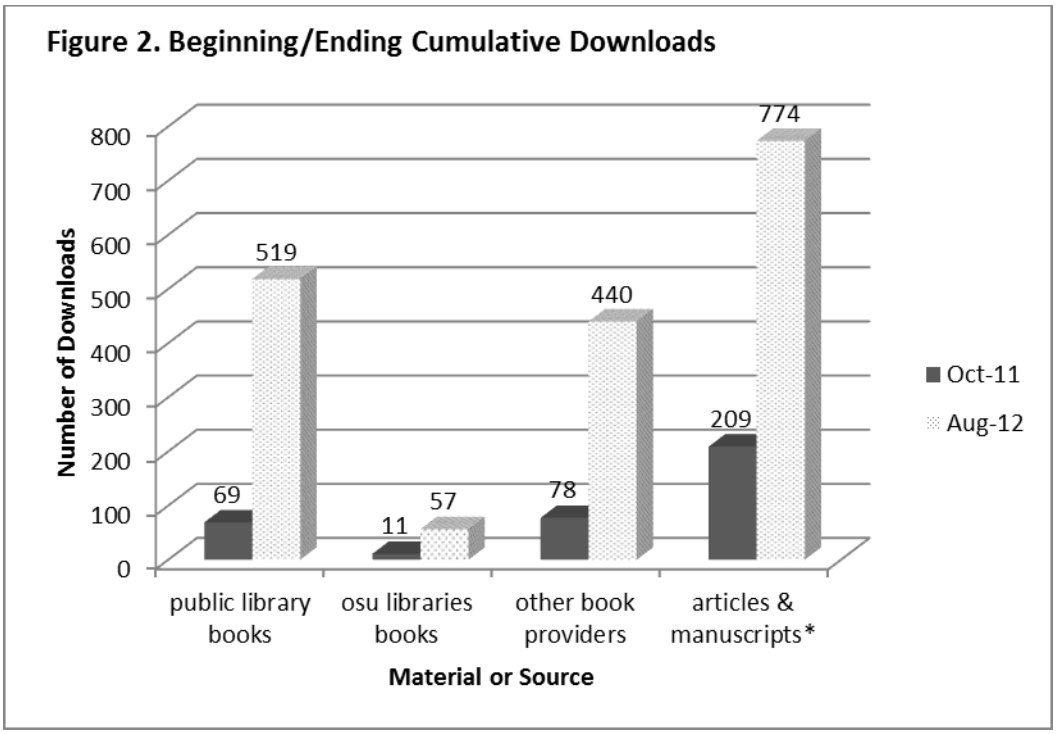


Figure 2. (Note: Articles and manuscripts skewed high due to 3 participants with 100 downloads and 2 participants with 50-100 downloads.)

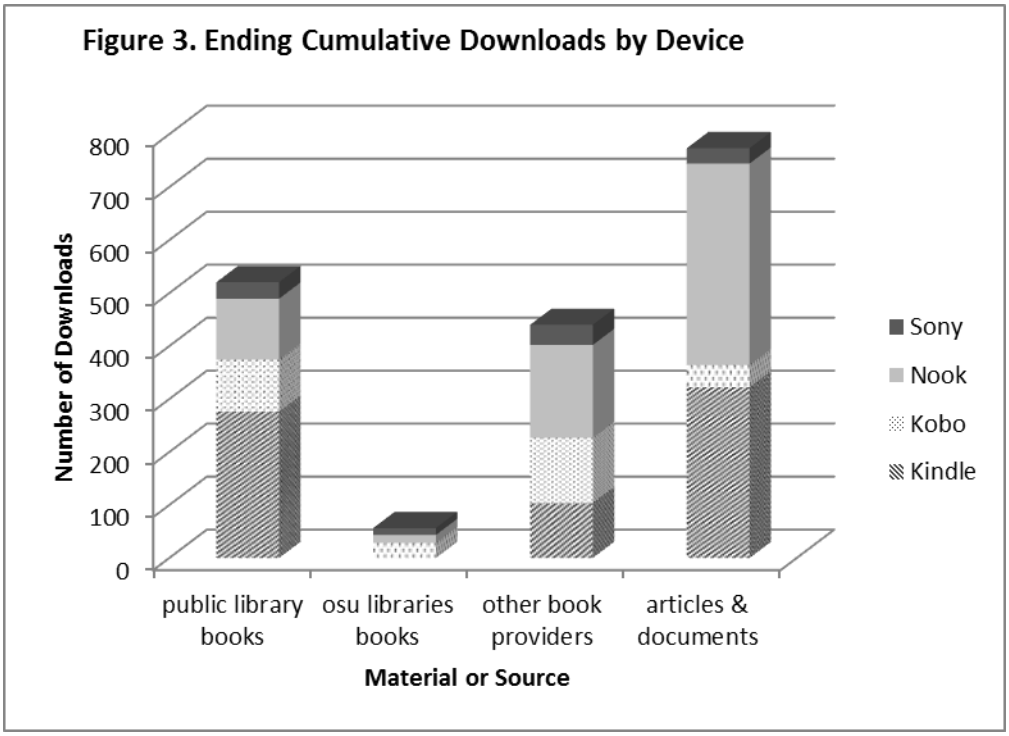
Several possible reasons explain the preference for book or leisure reading material. Receptive reading is defined as "reading a text from beginning to end without critically appraising the ideas, taking notes, or interrupting one's train of thought" (Pugh, 1978 as cited in Thayer et al., 2011, p. 2918). Thayer and his colleagues (2011) noted in their study of college students' use of Kindle e-readers that participants found the Kindle e-reader suitable for receptive reading and that the hallmarks of receptive reading were very similar to those of leisure reading. Book downloads across all devices in the OSULP study suggest that suitability of the Kindle e-reader for leisure reading can be extended to the Nook, Kobo and Sony. In other words, e-reader technology was a good fit with the desired task of receptive leisure reading.

By extension, OSULP study participants did not find e-readers to be a good fit for responsive reading which is focused on "developing new knowledge or modifying existing knowledge by engaging with the idea presented in a text" (Pugh, 1978 as cited in Thayer et al., 2011, p. 2918). Responsive reading reflected the more scholarly or work-related reading participants attempted on their e-readers. One participant summed up the experience of working with the e-reader note taking feature (one way of engaging with the text) saying,

> you have to switch back and forth between taking notes and turning the pages...not gonna do it for me…if I want the actual full article I intend to take notes on it so then I need the note taking feature with it.

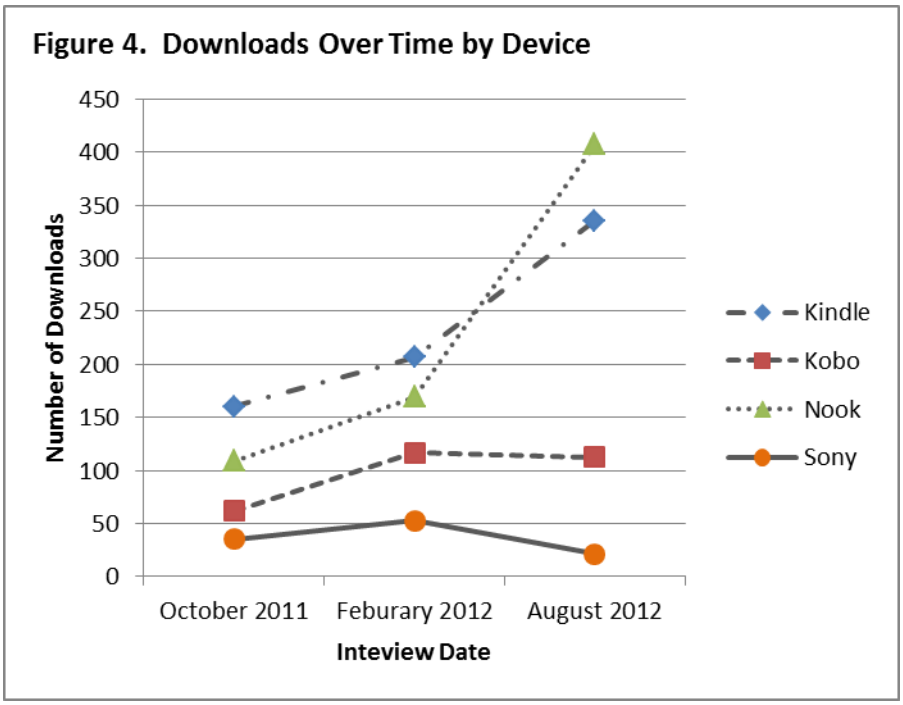
Another participant expressed frustration with scanned PDFs because they didn't automatically reflow to fit the e-reader. The participant commented "I mean most of it is the size. If you make it big enough that you can read it you have to scroll back and forth and it is very cumbersome to read a PDF on there."

An additional reason for the preference for leisure reading over scholarly materials was Kindle incompatibility with OSULP e-book content. Content provided by vendors like EBL and ebrary, which is primarily served up via Adobe DRM files, is not accessible on Kindle e-readers. Barriers like these influenced adoption and rejection decisions made at this stage and were seen in end-of-study downloads (Figure 3).



While Kindle participants' downloading of scholarly academic e-books was understandably non-existent, device-specific download data also highlighted broader trends in adoption and rejection behavior. With low across-the-board downloads, Sony participants appeared to be rejecting their e-readers. All other participants appeared to be heading toward adoption though Kobo participants were decidedly less active downloaders than Kindle and Nook participants.

A related glimpse into adoption behavior by way of total downloads at three points in the study year (Figure 4) showed similar trends.



At each point it was clear that Sony participants were not engaged with their e-readers and likely heading toward rejection while Kindle and Nook participants were increasing their download activity and likely heading toward adoption. Kobo participants continued to download materials but at a fairly steady pace making it difficult to interpret their adoption or rejection decisions on the basis of download activity alone.

Stage Five: Confirmation

Rogers (2003) stresses that adoption or rejection is a process. While it appeared that Kindle, Nook and possibly Kobo participants had progressed toward the point of adopting their e-readers, it remained to be seen if these decisions would hold. Indeed it is the confirmation stage of the innovation-decision process where adoption decisions are either reversed or confirmed (Rogers, 2003); confirmation is about seeking reinforcement for those decisions. Quantifying decisions for continued adoption or rejection proved anything but straightforward.

When participants were asked in the last interview if they would continue using their e-readers now that the study was over, a very slight majority (53.3%) of participants indicated e-reader adoption based on this question. Based on this same question, 43.3% of participants rejected their e-readers while 3.3% refused to confirm or reject adoption. However, when the investigators compared these responses to participants' download behavior and comments over the duration of the study, a very different picture of e-reader adoption emerged. From this more complex picture of adoption and rejection behavior, the investigators determined that only 33% of participants finally adopted their e-readers while 60% rejected them. Two participants (7%) exhibited such conflicting behavior and comments that they were recorded as "maybe" adopting their e-

readers.

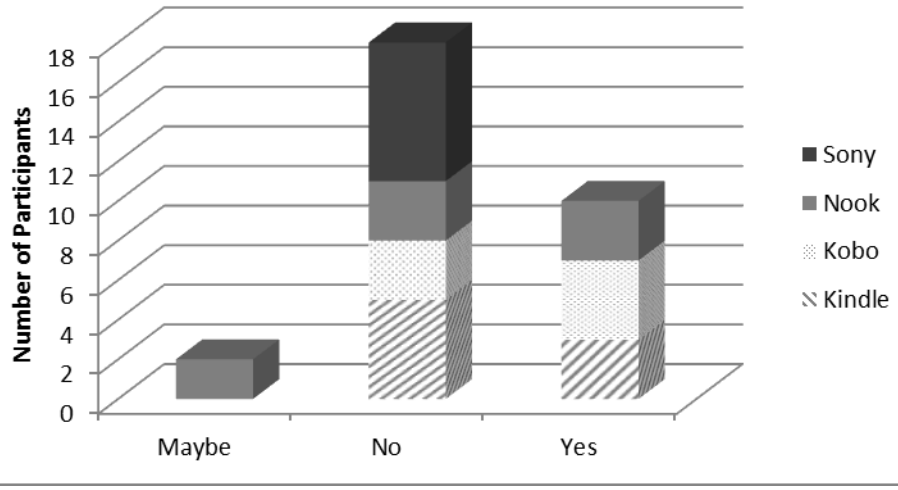
The primary difficulty in making the final adoption or rejection decisions resided with participants who confirmed adoption verbally but then qualified their decision or exhibited behavior which actually pointed toward rejection. The investigators coined this phenomena “false anticipation”. False anticipation of adoption was exhibited by this participant who said, “I would hope to maybe at some point use it” and by this participant who talked about upcoming travel plans saying,

> I’ll be going on vacation the end of next week and I was thinking of downloading to my e-reader. But I haven’t used it in a while ‘cause I find it annoying – just charging the battery and those kinds of things.

There were even a few participants who clearly rejected their e-reader but also expressed false anticipation. One participant said “No I mean I haven’t used it like in four months…I would maybe pick it up again if I was going on a long trip. That is where it was the most useful.”

While the majority of participants rejected their e-readers, closer examination of the data revealed variations by e-reader brand (Figure 5).

Figure 5. Device-specific E-reader Adoption



All Sony participants reversed initial decisions to adopt (mainly due to lack of Wi-Fi), while Kobo participants confirmed their adoption. Kindle participants looked like they were heading to adoption with download statistics but the lack of gesture-based navigation was a deciding factor against adoption. Nook participants were evenly split though latter-half download behavior indicated a more significant move toward adoption. It is worth noting here that Sony phased out their non-Wi-Fi e-readers shortly after this study began.

Over the course of the study year, investigators noticed several other significant external factors that likely impacted participants' adoption and rejection decisions. The first external factor that played into participants confirmation decisions was the increased prevalence of tablet devices on the consumer market. This was seen in participants' usage of another device in addition to or instead of their dedicated e-reader and in reading behavior changes throughout the study. During the third interview, investigators realized that the entrance of new devices on the consumer electronics market could be affecting results and added questions to the fourth interview to try to capture that influence.

Tablet ownership among Americans had doubled to 19% during the first half of this study (Rainie, 2012). By Interview 4, 79% of study participants were using another device instead of or in addition to their e-reader for e-reading purposes; they talked about smartphones and tablets when describing what devices they used for e-reading. Investigators were surprised by the variety of devices employed; that some participants cited use of multiple devices; and, that smartphones, along with tablets, were the most commonly used devices. In addition, participants mentioned use of other e-readers three times, laptops twice, iPods twice and the Kindle Fire once. Anecdotally, the investigators could not help but notice and feel the distinct and palpable excitement and happiness vocalized by the participants about these devices, similar to the enthusiasm expressed on receipt of their new e-readers.

Participants turned to tablets and smartphones because they could perform multiple, functional tasks. Tasks ranged from relatively minor, "I prefer to be able to do multiple tasks in one place and so I want to know, for example, what time it is when I am reading" to significant ones, like reading PDF articles. Throughout the study, reading PDFs on the dedicated e-readers persisted as a hurdle. One participant commented about task success only coming with a tablet and that they finally had "the ability to render PDFs and [use] some recently-discovered apps to help me read and markup PDFs". Another participant noted, "I use my phone. I read articles on my [Droid] phone." These participants found technology that better fit scholarly reading tasks. Goodhue and Thompson (1995) describe task-technology fit (TTF) as "the degree to which a technology assists an individual in performing his or her portfolio of tasks. [TTF describes] the correspondence between task requirements, individual abilities, and the functionality of the technology" (p. 216). For participants who struggled with reading PDFs on e-readers, their evaluation of e-readers included an assessment of how well it fit their tasks. Since their e-readers had clearly failed in this area, their evaluation led them to choose other devices which fit the task of reading PDFs.

In addition to determining that other devices better fit their needs, many participants felt these other devices were generally more usable and useful, two dimensions of Davis' (1985) Technology Acceptance Model (TAM). TAM posits that perceived usefulness is influenced by ease of use and that this, along with attitude, ultimately impacts system use. Perceived usefulness and perceived ease of use showed up in comments like "the mechanics of the Kindle…functions…in a very different way than the touch screen of

the phone and I don't like it [the Kindle]" and "usability – [the Sony is] difficult to use." In addition to being easier to use, other devices had preferred features such as wireless and gesture-based navigation that resolved participants' most challenging hurdles; "not having wireless access is the biggest…a big problem" was a typical reaction to such hurdles.

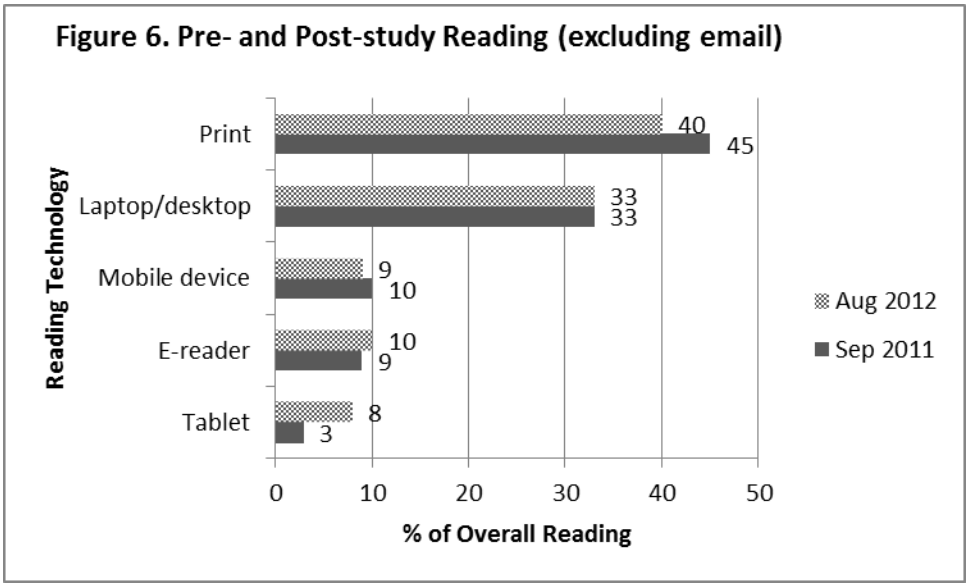
Participants' adoption of expensive devices compared to the free e-readers may seem curious when considering their high price and comments about cost as a reason for not purchasing a dedicated e-reader. However, Brown and McEnally (1992) found that people are "willing to pay for access and convenience…price is less important for those seeking utilitarian versus experiential benefits" (as cited in Chen and Grantiz, 2012, p. 1224). Participants wanted to do more than read for leisure, which the e-readers did well. If they were going to purchase an expensive device they "prefer[red] to be able to do multiple tasks in one place," such as read articles, consume media content, browse the Web and read for leisure.

The TTF and TAM models provide insight into decisions behind replacement discontinuance, another concept which helped the investigators understand e-reader rejection. Replacement discontinuance is "a decision to reject an idea in order to adopt a better idea that supersedes it. Constant waves of innovations…occur in which each new idea replaces an existing practice that was an innovation in its day" (Rogers, 2003, p. 190). E-readers, tablets and smartphones are part of a surge of innovations in the arena of personal mobile devices. E-readers were innovative when they entered the market, but the subsequent entrance of smartphones and tablets offered improvements to e-reader technology, notably wireless connectivity, multi-functionality and gesture-based navigation. Participants also engaged in "disenchantment discontinuance…a decision to reject an idea as a result of dissatisfaction with its performance" (Rogers, 2003, p. 190). "Such dissatisfaction may come about because the innovation is inappropriate for the individual and does not result in a perceived relative advantage over alternatives" (Rogers, 2003, p. 190). Participants felt the e-readers offered a "low relative advantage" resulting in "a slow rate of adoption and a fast rate of discontinuance" (Rogers, 2003, p. 191). One participant's use of a smartphone exemplified both concepts by saying:

> I always have my smartphone with me. And I like the screen itself better. It's not quite as large but I just like it better. I have more flexibility in how to enlarge things and stuff rather than having to go through the whole menu with the other e-books on the e-reader. Those are the reasons. Convenience, ease of use, plus I can charge it on the fly.

While the majority of participants may have rejected e-readers with some favoring replacement technologies, this did not mean that all e-reading was transferred to those replacement devices. At the last interview participants once again reported on their non-email reading (Figure 6). When compared to pre-study, non-email reading participants had decreased their print reading which corresponded to an equivalent increase in reading on tablets. Laptop and desktop e-reading stayed the same while mobile device

e-reading increased slightly and e-reader use decreased slightly. The investigators speculated that the primary change was increased work reading on tablets due to their ability to display PDFs.



While participants' e-reading behavior clearly responded to changes in the mobile device market, a second factor may have played into their decisions to reject dedicated e-readers. The investigators chose early on to not push knowledge about how to use e-readers to the study's participants. Although the investigators sought to engage participants in an authentic exploration of e-reader technology, they operated primarily as change agents seeking to raise awareness of e-reader knowledge by conceiving and implementing the study. Participants were largely left to develop their own strategies for obtaining how-to knowledge, though basic support was in place in the form of the OSULP E-books Guide (http://bit.ly/13ujQTV) and the OSULP E-reader Guide (http://bit.ly/17CKwHU).

Participants talked among themselves about their e-readers and compared notes according to one participant who said "…we've [work colleagues] had comparative conversations about the different e-readers that we are trying to use." Rogers (2003) notes that in terms of the innovation-decision processes, an increased focus on disseminating how-to knowledge will help longer-term adoption rates. While a renewed focus on disseminating how-to knowledge focused on e-readers to the study participants might not be productive given the majority rejection in favor of tablet or other mobile technology adoption, the link between knowledge dissemination and higher adoption rates raises questions about patron-focused services related to e-reader technology.

Development of E-reader Services

A final research objective was to learn whether trialing e-readers would lead participants to enhance or develop new services to support patrons. At the study's outset, all 30

participants indicated they thought having e-reader experience would benefit library patrons or Press customers. At the study's conclusion one year on, participants reaffirmed their original comments. However, investigators identified only two changes in services that were directly tied to participants' experiences with their devices; one change was fairly minor, though important, while the other indicated significant advances in understanding and practice. One participant suggested changing the e-book loan length on OSULP's EBL account from a maximum of seven days to a maximum of twenty-eight days as a direct result of trying to read an academic e-book in the former time allotment and not succeeding. This minor change significantly increased patrons' access to EBL e-books. The second change linked to participants' e-reader experience was the OSU Press staff's increased knowledge about e-books and e-readers which helped them make the case for a digital edition of Brian Doyle's *Mink River*[1], their first Kindle e-book. One Press participant noted that "having the opportunity to use and become familiar with e-readers definitely helped to propel us into the digital realm." Their hands-on experience assisted them as they made the e-edition. Not only could they see how the file looked on their respective e-readers, they could better understand the Press' future and their customers' needs and experiences as evidenced in this striking comment:

> On the Press side, how can we create a digital publishing strategy and plan for e-book editions if we're not familiar with the formats and the many ways in which customers buy and use e-books? In this transitional age, it's crucial to keep a step ahead of our customers.

As a result of their experiences with the study, the investigators initiated changes by adding access points to e-books from the library catalog, OSULP's discovery search platform, and the consortium catalog. Enhancements included the addition of a radio button to the library catalog scoped to just search e-books; creation of a search widget on the e-book guide; and installation of Adobe Digital Editions on all computers in the Information Commons allowing patrons to download e-books from the library collection to their personal e-readers while using library computers.

To foster awareness and promote knowledge about e-readers more broadly, the investigators held two workshops for the OSU community and one "petting zoo" at the annual OSULP in-service day. Due to low attendance and attendees' device-specific focus, the investigators decided to discontinue the workshops and to instead handle those types of questions through referral. The petting zoo was well-received by OSULP staff and that type of event could be repeated, though likely the most success for future events will come by showing new and different devices.

Conclusion

In *From Gutenberg to Zuckerberg*, Naughton (2012) writes about the evolving complexity of communication given the continual addition of technologies to the media ecosystem. He says "looking back on the history, one clear trend stands out: each new

[1] Doyle, Brian. (2010). *Mink River.* Corvallis, OR: Oregon State University Press.

technology increased the complexity of the ecosystem" (p. 161). The same could be said about reading technologies. Print books, computers, e-readers, smartphones, and tablets have all added complexity to participants' reading behaviors. They have continually had to decide which technology to use, when, and for what reading purpose. Each new technology involved an innovation-decision process, considerations of task-technology fit and considerations regarding ease of use, usefulness and impact on performance.

Despite the complexities that e-readers introduced into their personal reading ecosystem, many participants appreciated the opportunity to learn and think about e-readers and e-reading. While the majority of participants rejected the dedicated e-reader as a personal e-reading technology, they valued the experience gained by exploring the technology in an authentic way. The OSU Press staff experienced some of the most significant changes in understanding, and their customers will reap those benefits. OSULP patrons overall will benefit from changes made to e-book loan lengths, access points and learning materials which enhance and facilitate their use of OSU's electronic collection.

Regardless of adoption status, OSULP staff developed skills and fluency with e-reading that they may use with later device adoption. The e-reader functioned as bridge technology and experience; it helped participants move beyond e-reading on a PC to e-reading on mobile devices. For the academic market, acting as a bridge technology and as a leisure reading device may be the extent of the e-reader's value.

For libraries wanting to offer their staff a similar experience, using tablets may be a better choice given the narrowed price gap between e-readers and tablets (Newman, 2013) and the rise in tablet ownership to one-third of Americans (Zickuhr, 2013). Libraries might also consider ways to trial devices in a more targeted way. For example, conduct a survey of employees to learn who already owns the device or is considering purchasing it on their own. It may be helpful to get a good sense of who already engages in the behavior that the device facilitates. Consider having representation across all the categories of technology adopters in order to fully understand the range of experiences encountered by patrons. Last, do not underestimate the value of opportunities for staff to authentically try technology. Ultimately, this will benefit patrons and customers.

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