Introduction

Abstract

Innovation *is a broad topic and a word frequently used by librarians. Chapter 1 of* Library Technology Reports *(vol. 49, no. 7) "Technological Innovation: Perceptions and Definitions" introduces the focus of this issue, seeking to offer insights into what libraries mean when they refer to* innovation*, specifically, innovation with a strong technological underpinning. A brief review of the topic in scholarly and mainstream publications kicks off this issue, followed by a review of some more indirect avenues to better assess definitions and perceptions of what's meant by* innovation*. This work sets the stage for questions, answers, and analysis of a survey administered to Association of Research Library members, focusing on "technological innovation."*

Innovation is an interesting, broad, and . . . inescapable topic. There are different types of innovation: breakthrough, breakout, radical, sustaining, incremental, basic research, disruptive, and organizational. There are also innovations categorized as profit model, network, structure, process, product performance, product system, service, channel, brand, and customer engagement, as well as operational, product, strategy, and management innovation. There are books on innovation, including those with a focus on higher education (*Reinventing Higher Education: The Promise of Innovation, The Innovative University: Changing the DNA of Higher Education from the Inside Out*, and others), and journals on innovation, such as *Innovative Higher Education* and *Journal of Library Innovation*.[1] There are college degrees or certificates with the word *innovation* in the awarded field of study—at schools and i-schools such as the University of Colorado, the University of Minnesota, and, more closely related to librarianship, at places such as Syracuse.[2] Syracuse offers a Certificate of Advanced Studies in Information Innovation, including course titles such as Advanced Topics in Information Innovation and What's the Big Idea? Technology Innovation. There is a Center for Innovation Science and Innovation Studies at UC Davis and a Social Innovation Incubator at the University of North Carolina at Chapel Hill.[3] One well-known and enduring library vendor has the word innovative in its company name—Innovative Interfaces, Inc. There are industry and library events on innovation. The theme for the ALA 2013 Virtual Conference was "Mapping Transformation: Experimentation and Innovation," with the e-mail announcement titled "Register and get ready to innovate!"[4] Another example of a library event is the OCLC Innovation Series/Innovation in Libraries post–LITA National Forum event.[5] Speaking of OCLC, it has a "commitment to innovation," noting:

> The OCLC cooperative is the world's leading center devoted exclusively to the challenges facing libraries, archives and museums in a rapidly changing, digital global community. From its revolutionary online cataloging and interlibrary loan systems to its groundbreaking efforts in linked data and WorldShare management services, the cooperative investigates new trends in technology and new ideas in library practice. This helps the cooperative identify capabilities that will advance the value of library services and improve the productivity of librarians and library users.[6]

The biographical sketch of OCLC founder Frederick Kilgour notes, "In 1982, in presenting him with Honorary Life Membership, the American Library

Association described him as a 'scholar, entrepreneur, innovator, and interpreter of technology steadfastly committed to the preservation of humanistic values.'"[7] Within the OCLC leadership group is a VP of Innovation.[8] Along these same lines, while still at Vanderbilt, in addition to his work with the Television News Archive, well-known tech expert Marshall Breeding had the title of Director for Innovative Technologies and Research.[9]

There are psychological tests and profiles focusing on innovation, such as the Innovation Potential Indicator.[10] A February 2013 Google search on the word *innovation* retrieved 386 million pages; by May, this had grown to 397 million pages. There are recognized library experts on innovation, such as Stephen Abrams, Jane Dysart, and others. A recent Chronicle Review article began, "You can hardly mention higher education today without hearing the word 'innovation,' or its understudies 'change,' 'reinvention,' 'transformation.'"[11] At times, *innovation* seems like one of the most used words in the English language. Clearly, lots of individuals, librarians included, like to use the word *innovation*. One ACRL blog entry opens this way:

> We are subject to a non-stop barrage of information about innovation. Experts give us advice on how to be more innovative. The stories we read in our library literature share news about innovative libraries. Yet we rarely learn how to be innovative. Ask a few librarians what it means to be innovative and you'll get many different answers. It's something new. It's something different. It's something creative. It's something that comes from business.[12]

Regarding academic librarianship, a quick metric can be had by glancing at the winning applicants for the annual ACRL Excellence in Academic Libraries award. This award recognizes excellence for three libraries within community college, college, and university categories. Ten award cycles ago, in 2004, the word *innovation* was mentioned twenty-one times across the three applications for the winning recipients.[13] In 2013, it was mentioned twenty-seven times (and in 2012, it was mentioned fifty-six times).[14] It would be interesting to look at a list of presentations given at recurring library conferences, such as the American Library Association Annual Conference, the Library and Information Technology Association National Forum, Internet Librarian, and others, to see how often the word was used, whether in program titles or descriptions. Taking it a step further, regardless of how often the word *innovate/innovation/innovator* was used, how often were synonyms for *innovation* used? What are some synonyms for innovation? The online *Merriam-Webster Dictionary* offers the following

"related words" for innovation: *contraption, device, gadget, gizmo, novelty; design, product, work; dream, fantasy, picture, vision; conception, imagining, origination.*[15] *Thesaurus.com* offers the following synonyms: *addition, alteration, contraption, cutting edge, departure, deviation, introduction, last word, latest thing, leading edge, modernism, modernization, modification, mutation, newness, notion, permutation, shift, variation, vicissitude, wrinkle.*[16]

Stepping outside library confines, let's look at industry and the broader consumer environment for a moment. All readers are doubtless aware of the iPhone, and many probably own one. How does the word *innovation* apply to the iPhone? At the time of a Thomson Reuters report in fall 2012, Apple had 1,298 mobile patents, 416 of which were categorized as "iPhone, smartphone general."[17] Was the idea behind each patent—something new and something creators thought worth protecting—innovative? Could the number of secured patents associated with a technology (whether hardware, software, or both) help spot or identify innovation? Is the person who imagined the idea in the first place innovative (the innovator)? Are the physical manifestation of the iPhone (the hardware), the bits and bytes manifestation of the software (the code), and the myriad ancillary services making up the Apple ecosystem (iTunes, iCloud, etc.) innovative? Some might say the idea is innovative, some might say the individual is innovative, some might say the actual ideas brought together in a realized manifestation are innovative, some might say everything associated with the iPhone, from the idea to the final product and how the product is used by hundreds of millions of consumers can be defined and categorized as innovative.

All of this is a brief lead-in to the focus of this issue of *Library Technology Reports*, reports that "provide library professionals with insightful elucidation, covering the technology and technological issues the library world grapples with on a daily basis in the information age."[18] This issue is perhaps a slight departure from the norm. Rather than talking about a particular technology or service (or a family of related technologies and services), this issue takes an encompassing view of these library technology–related items and services and asks the question, *what do we mean when we say something is innovative?* What mental ideas, intentional actions, and subsequent realized changes or accomplishments would help define something in the library world—such as a service—as *innovative*? Hinted at above, the answer to this question is by no means crystal clear given the broad latitude associated with the word *innovation*. To narrow the focus, this work will focus on academic research libraries, not because other libraries—school, special, corporate, etc.—aren't innovative or don't use technology in an innovative way, but rather to simply narrow the scope. In addition, the author happens to work in an academic library, where there is a lot of talk at present

about how higher education must consider fundamental changes, innovative changes, for the twenty-first century. The fact that the original research in this issue focuses primarily on research libraries should not dissuade others from reading; at their core, many libraries, regardless of their designation, do many of the same things, host similar services, and are focused on similar ultimate outcomes.

Innovation and what it may mean for academic research libraries is still a very broad topic. While fascinating topics in their own right, a few things this research does not explicitly touch on, by intention, are leadership styles, organizational structures, innovation culture, stasis versus change, barriers to innovation, hits and misses and the importance of learning from mistakes, and issues such as whether the age or size of the organization influences innovation. To narrow things further, this issue will focus on what could be considered innovations with a strong technological underpinning—in other words, something in which, to realize and bring to operational fulfillment the original *innovative* idea, technology is a crucial element, or even *the* crucial element. As noted by Rogers, "Most of the new ideas whose diffusion has been analyzed are technological innovations, and we often use the word 'innovation' and 'technology' as synonyms. . . . [There is] a close relationship between hardware and software, between a tool and the way it is used."[19] There can be little disagreement that technology is extremely pervasive in libraries, let alone in society in general. For libraries, it helps connect users with information in many ways, and from a library staff perspective, it helps inform daily work, organizational structures, and workflows. So this is still a dangerously broad topic, but more manageable. The author won't try to define *technological innovation* so carefully, as that's part of what the research highlighted in this issue (chapter 3) seeks to better address. Rather, the author was curious about what one particular group of librarians—academic library deans and directors—thought about "technological innovation." The individuals in this group should have an opinion, as they are often the ones who, research indicates, should either directly lead or help foster a culture of innovation within the organizations they're stewards for (see chapter 3). It's also helpful for the myriad librarians and staff members supporting these leaders (or more appropriately, supporting the mission of the library, parent institution, and ultimately, the end users) to try to grasp what their leaders mean when they discuss *innovation*. Jeffrey Phillips notes:

> What a CEO says about innovation matters, in terms of the commitment of the rest of the organization, in terms of direction, in terms of investment, in terms of strategy. The starting point for any successful initiative or venture in any business is a clearly articulated goal, definition, or strategy, which is then backed by deep commitment. If we can't define innovation well, how can we possibly be committed to its success?[20]

In response to the article containing the statement above, one reader commented, "I agree with you that the way CEOs define innovation is troubling. They are all over the place. No wonder most companies suffer from 'death by a 1000 initiatives' and are so vulnerable to being disrupted in the market."[21] With this issue of *Library Technology Reports*, there is no implied point, no hypothesis being tested, and detailed statistics are absent. Rather, if this issue of *Library Technology Reports* can provide a few more insights into what library leaders think about the intersection of technology and innovation, that's a start. Even more (as library leaders aren't the only ones with an opinion), if the issue engenders further conversation or even debate among other librarians, it's served its purpose.

Chapter 2 begins with a brief look at the literature and attempts to put a slightly tighter frame around the discussion of technology and innovation. The "literature" is defined broadly, and the discussion steps outside the bounds of strictly library-focused literature, looking at industry in general. In attempting to tighten the discussion as it relates to libraries, chapter 2 also looks at information that can be gleaned by following some different paths to try to better understand and better categorize what is meant by the intersection of technology and innovation within libraries. Chapter 3 focuses on the questions and responses from an early 2013 research project, which invited participation from all 125 members of the Association of Research Libraries, focused on technological innovation in research libraries. This survey consisted of ten questions, many of which were multiple-choice, but which also allowed plenty of opportunity to provide free thoughts. Some additional relevant notes from the literature will be interwoven as appropriate with the discussion of the responses. The conclusion to this issue in chapter 4 is followed by an appendix providing a clean copy of the original survey questions.

To conclude the introduction, is this an important topic? It's an interesting one. One could consider each issue of *Library Technology Reports* as being on, about, or including something related to technological innovation (see chapter 2). Certainly academia is undergoing a tremendous period of change. "Even though technology may not be the entire focus, colleges and universities make massive technology investments based on what they believe students need, want, and already have."[22] "Libraries are challenged to be nimble, innovative, responsive, proactive and, most of all, able to demonstrate their value. Libraries must be able to measure their outcomes and systematically make

technology, budget allocation, service, and policy decisions based on a range of data—needs assessment data, customer evaluation data, stakeholder expectation data, and internal process and organizational effectiveness data."[23] Within this fundamentally changing and even volatile higher education environment, perhaps more than ever, academic research libraries are seeking new avenues—or at least augmenting existing efforts—to illustrate their value to their parent organizations. Much research has been done on innovation as applied to business—those seeking a monetary profit; less has been done on nonprofit entities, and much less again on the precise topic at hand. Perhaps this research can contribute to filling part of this gap and to promoting further discussion on technological innovation within academic libraries.

As noted by the Boston Consulting Group, analyzing data from over 1,500 senior executives, "According to our 2012 survey, innovation is rapidly moving up the CEO agenda across regions and industries. Seventy-six percent of respondents ranked innovation as a 'top-three' strategic priority—the highest level in our survey's history."[24] Jeffrey Phillips pointed out, "I'm sure we could spend hours debating about the definition of innovation, much like ancient scholars argued about how many angels could dance on the head of a pin. Unlike the angels on a pin, however, the definition of innovation MATTERS. . . . A definition signals intention, commitment, direction, and importance. . . . If innovation is poorly defined, innovation is like discovering a new continent without a map, without a compass, and without knowing what's important when you discover it."[25] As noted by Deiss, "It is evident from current environmental indicators that organizations need to utilize two tools skillfully in order to create customer value: innovation and strategy. While strategy can exist without innovation, it is unlikely that effective innovation can occur without the use of strategy. . . . Innovation and strategic thinking are critical to any organization's future and have direct correlations to the organization's mission and purpose."[26] Pondering the pace of innovation, Jantz remarked, "The research library exists in a more unstable environment brought about by rapid technological innovation and pressures from the economic, financial, and political sectors of our society. One can speculate that the library will need to have an increased sense of urgency in responding to the external environment or, alternatively, be left to follow whatever the external environment dictates."[27] Patterson et al. stated, "Organizations that clearly articulate what is meant by 'innovative working' are more likely to be successful in their attempt to encourage innovative behaviors."[28] Stephen Bell, associate university librarian at Temple University, noted, "Our success and sustainability can no longer be guaranteed by simply doing the same things we've always done and which is what everyone expects us to do—and for which they increasingly no longer really need us. When we innovate we seek out new services that provide value to our community members."[29] Quite frankly, if librarians can better understand what we think of as innovative, based in part on what follows, they may have a slightly easier time of developing a strategy for it, including the generation of ideas, background research, application, and assessment.

Notes

1. Ben Wildavsky, Andrew Kelly, and Kevin Carey, *Reinventing Higher Education: The Promise of Innovation* (Cambridge, MA: Harvard Education Press, 2011); Clayton Christensen and Henry Eyring, *The Innovative University: Changing the DNA of Higher Education from the Inside Out* (San Francisco: Jossey-Bass, 2011); *Innovative Higher Education*, journal published 4–5 times a year by Springer, accessed October 20, 2012, www.springer.com/education + %26 + language/ higher + education/journal/10755; *Journal of Library Innovation*, online journal published twice a year, accessed October 20, 2012, www.libraryinnovation.org.
2. "UCCS Bachelor of Innovation Family of Degrees," University of Colorado at Colorado Springs, accessed March 9, 2013, http://innovation.uccs.edu; "Innovation Studies Certificate," University of Minnesota, College of Continuing Education, accessed March 9, 2013, www.cce.umn.edu/Innovation-Studies -certificate; "Certificate of Advanced Study in Information Innovation," Syracuse University, School of Information Studies, accessed March 9, 2013, http://coursecatalog.syr.edu/2011/programs/ information_innovation.
3. "Center for Science & Innovation Studies," University of California, Davis, accessed March 9, 2013, http:// innovation.ucdavis.edu; "UNC Social Innovation Incubator," University of North Carolina at Chapel Hill, accessed March 16, 2013, http://campus-y.unc.edu/ incubator.
4. ALA Virtual Conference, "Register and Get Ready to Innovate!" e-mail, May 20, 2013. Also see American Library Association, "ALA Virtual Conference 2013: Mapping Transformation," accessed May 24, 2013, www.learningtimes.net/ala13.
5. "OCLC Innovation Series," OCLC, accessed February 23, 2013, https://www.oclc.org/events/innovation .en.html.
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7. "OCLC's Presidents," OCLC, accessed February 23, 2013, www.oclc.org/en-US/about/leadership/presi dents.html.
8. "OCLC Leadership," OCLC, accessed February 23, 2013, www.oclc.org/en-US/about/leadership.html.
9. Marshall Breeding, "Marshall Breeding," Library Technology Guides, accessed March 1, 2013, www .librarytechnology.org/breeding-bio.pl.
10. "Innovation Potential Indicator: Measuring Innovation

Motivation," product fact sheet, OPP, accessed February 23, 2013, www.opp.eu.com/SiteCollectionDocuments/pdfs/innovationpotentialindicator.pdf.

11. Ann Kirschner, "Innovations in Higher Education? Hah!" Chronicle Review, *Chronicle of Higher Education*, April 8, 2012, http://chronicle.com/article/Innovations-in-Higher/131424.

12. Steven Bell, "Ideas for Innovation Are All around Us," *ACRLog* (blog), June 28, 2011, http://acrlog.org/2011/06/28/ideas-for-innovation-are-all-around-us.

13. "Excellence in Academic Libraries Award," accessed February 9, 2013, Association of College and Research Libraries, www.ala.org/acrl/awards/achievementawards/excellenceacademic. The author did a word search across winning applications available at this website.

14. Ibid.

15. *Merriam-Webster Dictionary* (online), s.v. "innovation," accessed September 8, 2012, www.merriam-webster.com/dictionary/innovation.

16. *Thesaurus.com*, s.v. "innovation," accessed September 8, 2012, http://thesaurus.com/browse/innovation?s=t.

17. *Inside the iPhone Patent Portfolio*, IP Market Report, (New York: Thomson Reuters, September 2012), 4, http://ip-science.thomsonreuters.com/m/pdfs/iphone-report.pdf.

18. *Library Technology Reports*, journal published 8 times a year by ALA TechSource. The statement appears on the last page of each issue, highlighting topics that will be published for the current year. More information at www.alatechsource.org/ltr/index (accessed September 8, 2012).

19. Everett M. Rogers, *Diffusion of Innovations* (New York: Free Press, 2003), 12–13.

20. Jeffrey Phillips, "What Is the Definition of 'Innovation'?" *Innovate on Purpose* (blog), January 18, 2012, http://innovateonpurpose.blogspot.com/2012/01/what-is-definition-of-innovation.html.

21. Saul Kaplan, comment posted January 18, 2012, in response to Phillips, "What Is the Definition of 'Innovation'?"

22. Diana G. Oblinger and James L. Oblinger, "Introduction," in *Educating the Net Generation*, ed. Diana G. Oblinger and James L. Oblinger (Boulder, CO: EDUCAUSE, 2005), 1.3, http://net.EDUCAUSE.edu/ir/library/pdf/pub7101.pdf.

23. Amos Lakos and Shelley Phipps, "Creating a Culture of Assessment: A Catalyst for Organizational Change," *portal: Libraries and the Academy* 4, no. 3 (July 2004): 346–347.

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25. Phillips, "What Is the Definition of 'Innovation'?"

26. Kathryn J. Deiss, "Innovation and Strategy: Risk and Choice in Shaping User-Centered Libraries," Library Trends 53, no. 1 (Summer 2004): 17.

27. R. C. Jantz, "A Framework for Studying Organizational Innovation in Research Libraries," *College and Research Libraries* 73, no. 6 (November 2012): 538.

28. Fiona Patterson, Maura Kerrin, Geraldine Gatto-Roissard, and Phillipa Coan, *Everyday Innovation: How to Enhance Innovative Working in Employees and Organisations* (London: National Endowment for Science, Technology, and the Arts, December 2009): 12, www.nesta.org.uk/library/documents/Every-day-innovation-report.pdf.

29. Bell, "Ideas for Innovation Are All around Us."