

Innovation in Academic Libraries: An Analysis of University Librarians' Perspectives

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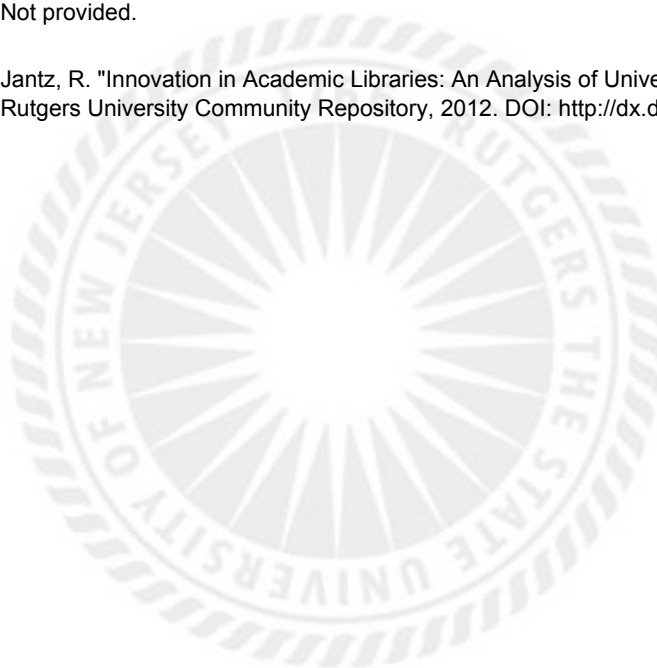
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An Analysis of University Librarians' Perspectives

Abstract

Through a series of structured interviews, university librarians at six institutions provided their perspectives on innovation in academic libraries. The literature on leadership styles and organizational change provides insight into the roles of these leaders in the innovation process. Leadership is cited by many researchers as being a critical factor for organizations to innovate. In this study, university librarians' perspectives reveal a commitment to innovation, some distinctively non-traditional innovations, and a concern for how to encourage risk-taking behavior. The study also seeks further insight into the innovation process by interpreting the interview data within a larger theoretical context. Although leadership and management can foster innovation in a library, researchers have reported other factors that can influence the ability to innovate, including organizational aspects – size and complexity – and environmental factors. Beyond the organizational aspects, the individual and the norms of the profession create a framework with certain boundaries, some of which may impact the ability to innovate.

1. Introduction

Few organizations can remain static in the postmodern society - an environment characterized by rapid change in social, economic, and political influences. Many case studies have been published on why seemingly obvious innovations have failed, leading researchers to conclude that innovation is very difficult and innovation adoption is disappointingly slow. Scholars have suggested, either implicitly or explicitly, that the research library and librarians must change. Martell (2000) eloquently implores librarians to “to create a range of services unthinkable in the twentieth century, but mandatory in the twenty-first century, if we are to provide society with the value added services it will need from its professionals.” In his article about the new library, Atkinson (2001) states: “The new library must be mainly a social gathering place, somewhat noisy, with plenty of coffee.” This quote suggests some rather profound changes will likely occur in the academic library. During the last half of the 20th century, many researchers and practitioners have claimed that academic libraries must make dramatic changes or face the possibility of being marginalized. Taylor (1973, p. 453) speculates on whether the library can meaningfully adapt to changes expected in the next several decades. In a study of innovation in academic libraries, Clayton (1997, p. ix) states that “innovation is no longer an option but a necessity”. Thompson (1982, p. 118) points out that the pressure for change comes “not just from the potentiality of the new technology, but from the professional paralysis which has now made most of our major libraries largely unusable.” Evident within these commentaries are forces acting upon the library and the professional librarian, forces which the profession must confront and address in order for the institution and profession to keep pace with the needs of a modern information society.

What is the nature of the environment in which we find the academic library¹? Academic environments pose unique and significant challenges with regard to identifying the need for major change, motivating the need for change and taking the required action to institutionalize the change. Bass (1985, pp. 159-160) summarizes the condition in the modern university as one embedded in a state bureaucracy, complicated by union contracts, faculty norms and traditions. The research library inherits many of these characteristics from its parent institution. Most libraries have significant external controls, both administratively and financially, which can limit innovation. Budd (1998, p. 3) notes that each academic library is part of a larger organization and, ultimately, authority rests outside of the library. Beyond the boundaries of the institution, the rapid changes in information and communication technologies are driving changes in the

¹ To provide a measure of rhetorical variety, the terms academic library, research library, and library will be used interchangeably in this manuscript.

library. Institutions, such as academic libraries, do not have the benefit of quantitative measures such as profit/loss statements to provide very visual evidence for the need to change and a reliable mechanism for measuring outcomes. The students and faculty, or “customers”, comprise a very diverse group and do not typically voice dissatisfaction when they receive mediocre or low quality service. Competitive threats from the external environment may also not be recognized as requiring a response and the need for major change. One can therefore ask why a library leader might incur risk by instituting major change when incremental change appears sufficient for the institution to survive and thrive. However, as Nadler and Tushman (1990) have indicated, a continued focus on incremental innovation in the face of environmental turbulence is a recipe for failure.

2. Problem Statement

Leaders and, more specifically, the singular leader can have a profound impact on organizational outcomes and the ability to innovate. Although Stoffle (1996), a university librarian, does not use the language of innovation, she holds that “academic libraries must change – fundamentally and irreversibly – what they do and how they do it, and that these changes need to come quickly.” Neal (2007), in highlighting a research and development perspective, suggests that there will need to be “a heightened attention to innovation” within the academic library. Strategy, organizational structure, and the innovative climate are largely established and controlled by the leadership of an organization. In an institutional, nonprofit organization such as an academic library, considerable power is delegated to the leader as the top administrator (Musman, 1982). In an ageing profession and one largely governed by professional norms, the library leader may find it difficult to initiate organizational change or may, in fact, personally resist change. Given the growing uncertainty about the role of the academic library in the university, it becomes increasingly important to understand innovation and how library leaders are creating an innovative climate in their institutions.

The bulk of innovation literature has focused on the for-profit and manufacturing sectors. There are relatively few studies of innovation in academic libraries and, to date, no study has examined the perspectives on innovation of the singular leader in the academic library – the university librarian. Through responses to interview questions, this study raises awareness of the importance of innovation in academic libraries and identifies some of the key problems that are identified by a select group of university librarians. These insights will not only be useful to library practitioners but also the perspectives, taken as a whole, illustrate the larger context of innovation and identify important variables to be examined in future empirical studies.

3. Literature Review

3.1. Innovation and organization structure

In this study, *innovation* is defined as the introduction into the organization of a new product, a new service, a new technology, or a new administrative practice; or a significant improvement to an existing product, service, technology, or administrative practice (Daft, 1978; Damanpour, 1996). Rogers (2003, p. 404) defines an organization as a stable system of individuals who work together to achieve common goals through a hierarchy of ranks and a division of labor. The Diffusion of Innovation (DoI) process has been described extensively by Rogers and will be used as a model in this study to clarify the essential concepts relating to the innovation process. The DoI process indicates how an innovation is communicated through certain channels over time among the members of a social system (Rogers, 2003, p. 5). According to Rogers, innovation has five perceived attributes which explain different rates of adoption (*ibid*, p. 15): a) relative advantage - the degree to which an innovation is perceived as better than the idea it replaces, b) compatibility – the degree to which an innovation is perceived as being consistent with the organization’s values and culture, c) complexity – the degree to which an innovation is perceived as difficult to understand and use, d) trialability – the degree to which an innovation lends itself to experimenting and prototyping, and e) observability – the degree to which the results of an innovation are visible to others. The diffusion process in organizations can be divided into three broad categories – initiation of the innovation, the decision to adopt, and implementation of the innovation (*ibid*, pp. 421 – 422).

In using a structural contingency framework, many researchers have focused on the relationship between innovation and organizational structure (Hage, 1999). In a classic text on social change in complex organizations, Hage and Aiken (1967) identify three key structural variables that affect organizational change and innovation. *Complexity* (*ibid*, p. 32) relates to the number of occupational types in an organization, especially those positions requiring significant accumulated knowledge. *Centralization* (*ibid*, p. 38) refers to the way in which power is distributed in an organization and the number of people who can participate in decision making. *Formalization* (*ibid*, p. 43) refers to the number of rules that specify what is to be done and the degree of enforcement of these rules. Much of the early innovation literature has reported that complexity is positively related to the adoption of innovations² while both centralization and

² Most of the empirical studies reported here have operationalized innovation as a rate which is measured by the number of innovations adopted per unit time in an organization.

formalization are negatively related to innovation adoption (Hage and Aiken, 1967, pp. 33 – 48; Duncan, 1976).

Organizational size is an important structural variable that has been the focus of many innovation research endeavors. Damanpour (1992) points out that there is little consensus among researchers regarding the magnitude or the direction of the size-innovation relationship. It is generally thought that bureaucratic inertia increases with the size of the organization, resulting in less innovative activity. Although limited by bureaucratic obstacles, the large firm typically has slack resources and can more easily assume the risk of major innovation projects. On the other hand, the small firm is thought to be more flexible and can respond more quickly to external forces. In a meta-analysis of empirical studies over a period of three decades, Damanpour (1996) states that some of the most important predictors of organizational innovation are structural complexity and organizational size, however he also points out that correlations have varied significantly, ranging from -0.09 to 0.71 for the structural complexity-innovation relationship and -0.04 to 0.76 for the size-innovation relationship. In studies of non-profit organizations with institutional frameworks including education, health, and government agencies, multiple studies have reported a positive relationship between size and innovation (Baldrige & Burnham, 1975; Kimberly & Evanisko, 1981; Damanpour & Childers, 1985; Walker, 2008). In contrast, the study of high schools by Daft and Becker (1978, pp. 81-82) indicated that there was no relationship between district size and innovation for technical innovations, however a positive relationship did exist for administrative innovations. In a meta-analysis, Damanpour (1996) examined contingency factors that affect the relationship between bureaucratic control and innovation. He reported that the effect of size on the centralization-innovation relationship was not significant. These varied findings result, in part, by not accounting for different organizational types and a unique institutional perspective.

Currently, international research on the nonprofit sector is paying increasing attention to institutional as well as organizational analysis (Anheier, 2009; Bode, 2003). One of the most promising theories that helps us understand how nonprofits such as universities and research libraries innovate emanates from the work of DiMaggio and Powell (1983). In their theory of institutional isomorphisms, DiMaggio and Powell contend that the engine of bureaucratization has moved from the competitive marketplace to the state and the professions. Understanding the forces that create change in the institution is essential in order to understand why, or if, academic libraries innovate. DiMaggio and Powell state that institutions are becoming more homogenous, and organizational changes seem less driven by competition and the need for efficiency. Their theory proposes that there are three isomorphic mechanisms which force one institution to

resemble another. These three mechanisms of institutional isomorphic change are *coercive* – resulting from both formal and informal pressures exerted on organizations upon which they are dependent, *mimetic* – resulting from standard responses to uncertainty, and *normative* – a force associated with professionalism. In the context of academic libraries, we might expect a coercive force to emanate from state government or the home institution and the associated political and budget control. When a library faces uncertainty such as that introduced by the environment and technological advances, a mimetic force can cause imitation where the library adopts services or products that appear to be successful in other institutions. This mimetic behavior can produce viable solutions in a short time with minimal cost and effort. Alternatively, these “mimed” solutions may not be based on serious reflection regarding the needs of the specific library, resulting in unsuccessful innovations. Perhaps the strongest normative force operating on an academic library is professionalism which resides in formal education and professional networks. Although there has been considerable discussion about professional degrees within the community, a large percentage of academic libraries still require the MLS as a condition for employment as a professional librarian – evidence of a significant normative force. This normative force provides a definition and context for the profession, but it can also create substantial barriers to innovation.

3.2. *Innovation in libraries*

Writing some 40 years ago, Jesse Shera suggested that a new library institutional structure must emerge to address the needs of a modern, pluralistic society and one in which research is increasingly interdisciplinary. For many years, the academic library “. . . responded to the requirements of its parent institution rather than the direct pressures from the forces that shaped the supporting culture” (1965, p. 35). Implied within Shera’s comments is the impression that libraries are bound in tradition and are not responding to the forces that originate outside of the university. Buckland (1996) takes an historical perspective and comments critically on the lack of innovation in U.S. libraries during the early 20th century. He points out that innovation was a vital force in librarianship in the late 19th and early 20th centuries. However the period of the 1930s and 1940s did not produce any significant innovation in U.S. libraries. During this period, there appeared to be much innovation in Europe which was ignored by U.S. libraries. For example, microforms were considered as an expansion of the paper codex and Otlet developed hypertext theory before computers and the Internet existed. According to Buckland, most of the electronic features in the library of the 21st century were foreseen and discussed at the International Congress of Documentation of 1935.

In a more recent perspective on libraries, Dalbello (2005a, 2005b) has examined technological innovation in the National Digital Library Program (NDLP) at the Library of Congress (LOC). The main thesis of her research is that understanding technological innovation in the library context depends on insight into how innovators and the environment are shaping innovation decisions. Dalbello blends the SCOT (Social Construction of Technology) framework with theories of isomorphic change (Dimaggio & Powell, 1983) in order to explain societal pressures and self-directed change, highlighting that innovation processes are likely to encounter resistance because of the need to conform to established processes. Although Dalbello's focus is on the NDLP and specific innovators, her findings have implications for understanding how institutions such as the academic library innovate and respond to transformational forces. For example, she found that a simple concept such as the goal of creating five million digital images in five years seemed to assimilate, incorporate, and standardize differences within the organization. In the NDLP case, the quantitative goal "provided a clear sense of what a successful outcome would be" and created a non-ideological objective which was embraced by all participants. Librarianship as a profession and a normative force had relatively less impact in contrast to this overarching digitization goal.

As one of the few researchers who have studied innovation in libraries, Musman's review of literature (1982) points to some important areas to examine. He states that the serious researcher must pay careful attention to the libraries' organizational structure and the technological environment, noting that the most important structural predictor of innovation over a period of time is the number of occupational specialties found in an organization. A process that he dubs as "machine bureaucracy" is evident in libraries and is characterized by obsession with controls and rigid structures – what Hage and Aiken (1970) term "formalization". Musman concludes his article by stating that the most important innovation within the library profession would be a change in attitude. In assessing 100 years of innovation in libraries, Musman (1993) chronicles some of the attitudes of librarians toward technological change and the role innovations have played in shaping the development of library processes and services. In the early 20th century, a strong cultural influence developed among librarians, in part as a reaction to technological advancements in the larger industrial environment. Librarians suspected that automobiles, movies, and television were having a negative impact on reading. Hours traditionally spent with a book were now being diverted to other types of entertainment. To librarians, the book represented the embodiment of knowledge and thought, and these technological diversions – the automobile and movies – did not bode well for the health of the society. Musman's anecdotal analysis does not always support the more recent research findings

on innovation. Although he cites professionalism and lack of rigid structures as positively affecting innovation in early libraries, he also states that small size (ibid, p. 8) can contribute to innovation – an observation that is not generally supported by the size-innovation studies as reported previously.

A few in-depth studies of innovation in academic libraries have contributed significantly to the accumulated knowledge on this topic. In a published dissertation, Clayton (1997) uses a case study approach and Rogers' five attributes as a framework to study innovation in Australian academic libraries. His findings contribute significantly to Rogers' model and he also introduces novel innovation strategies (ibid, p. 47 – 48) including the disguising and concealing of potentially innovative projects. Beyond these proposed additions, Clayton observes that a major problem in libraries is the rigidly defined job classifications which, according to many researchers, encourages ritualistic and unimaginative behavior (ibid, p. 86). In a mixed mode analysis of 140 academic libraries within institutions that grant Master's and Bachelor's degrees, White (2001) found that the size of the organization is positively related to innovation in the area of digital reference services. She also found that early adopters differed significantly from non-adopters in all variables that were examined including size of the institution (measured in terms of per student operating budget and expenditures for computer search services), number of staff, gate counts and reference questions. Based on Hage and Aiken's theory (1970, 1967) of organizational complexity, Howard's dissertation (1977) presents an analysis of how the impact of organizational structure can affect the rate of innovation in academic libraries. In reviewing the research of Hage and Aiken, Howard reports that a key variable that stimulates creativity is organizational complexity and the critical component of organizational complexity is diversification of knowledge. Diversification of knowledge can be characterized by the number of occupational job titles. For the sample of institutions, Howard selected four members of the Association of Research Libraries (ARL), grouped by demographic similarities into two pairs. For these two pairs, Howard reported mixed results in the complexity-innovation relationship. Howard's study suffers from a very small sample and insufficient attention to other variables such as those related to the environment and size of the organization.

3.3. Leadership

An underlying assumption of this research is that a more uncertain external environment is driving the need for change in academic libraries. This uncertainty emanates from the turbulence and dynamism in the political, economic, and technological environment of the 21st century. Although there are compelling arguments suggesting that organizational innovation can flourish in spite of or independently of leadership, the premise of this research is that leadership

makes a difference and, perhaps, a big difference for nonprofit organizations such as research libraries. Van de Ven (1986) discusses the central problems of innovation management. He states that “creating these intra- and extra-organizational infrastructures in which innovation can flourish takes us directly to the strategic problem of innovation, which is institutional leadership.” More specifically, institutional leadership is “critical in creating a cultural context that fosters innovation . . .” In a related article, Furst-Bowe and Bauer (2007) discuss innovation in academia, stating that these institutions must innovate in order to remain viable. Based on their experience with the Baldrige model for innovation, these authors suggest that innovation and change “. . . must be driven by individuals with line authority – presidents, vice-presidents, deans or department chairs.” At the organizational level, Kanter (1988) states that linking top management to an innovation project is critical in the success or failure with innovation.

Leadership is an unusually complex activity consisting of many different dimensions. Many leaders find themselves in an environment that requires change and yet they may not recognize this need or be willing to act on it. Theories regarding individual leadership styles have coalesced into three primary models: transactional, transformational, and charismatic (Burns, 1978; Bass, 1985). A transactional leader is one who operates within the existing culture and attempts to satisfy the needs of organizational members by using exchanges and contingent reward behavior (Bass, 1985, p. 11; Witherspoon, 1997, p. 60). In this model, the leader recognizes what the follower must do to attain designated outcomes and the leader clarifies this role for the follower. Followers are motivated by the leaders’ promises, praise, and rewards or they are corrected by negative feedback, reproof, threats, or disciplinary action. It is the transactional style that is most often equated to a manager. In contrast, the transformational leader seeks “to empower organizational members and successfully initiate and manage change . . .” (Witherspoon, p. 18). Inherent within this concept of transformational leadership are the notions that the leader is a change agent who emphasizes follower self-fulfillment and the accomplishment of goals through motivation and intellectual achievement (ibid, p. 60). It is the transformational leader who can bring about major changes in groups, organizations and societies.

Riggs (1998) asks rhetorically “why is there a dearth of articles and books on the topic of leadership in libraries?” In drawing a distinction between managers and leaders, Riggs notes that the manager relies on control with a short-range focus while the leader inspires trust and challenges the status quo with a long-range perspective. He concludes that the 21st century library demands visionary leadership with a sense of urgency. Stoffle et al (1996) sound a similar refrain in positing that fundamental changes must be led by senior management and these changes

must come quickly. Sweeney's vision (1994) of a post-hierarchical library relates to the innovation concepts of centralization and formalization. He views the new library as one that must abandon its bureaucratic structure for a more flattened organization with cross-functional teams. In an empirical study of leadership in academic libraries, Albritton (1998) notes that there is evidence that library staff perceive a leader's transformational characteristics as having a more positive effect on outcomes than transactional traits. Kreitz (2009) uses emotional intelligence as a theoretical framework to study university library directors. Her findings indicate that a library director must be able to create a vision for change, communicate that vision, and then motivate staff to support the change. In suggesting the need for more research, Hage and Aiken (1970, p. 124) speculate that innovation and program change may simply be a function of variations in leadership style.

4. Research Questions

The literature review has emphasized the impact that organizational structure, the institutional environment, and leadership can have on innovation in the academic library. The important research questions that emerge from the literature review and the theoretical framework are as follows:

1. What are the characteristics of innovation as understood by university librarians?
2. How are university librarians involved with innovation at their institutions?
3. In the view of university librarians, what are the processes and forces that stimulate innovation or, alternatively, act as barriers to innovation?
4. How is innovation, as perceived by university librarians, affecting scholarly communication, especially with respect to professional roles and specific user groups?

5. Procedures

The participants for this study were university librarians and data was collected by interviews with each librarian. Appendix A presents the questions and prompts used during the interview.

5.1. Participants

In selecting university librarians to participate in this study, a variational approach was used in order to maximize similarities and differences. The six libraries and the associated university librarians have been selected from the Association of Research Libraries (ARL) to achieve a cross-section of varying demographics such as size of the library, funding process (private or public), and geographic region. The six university librarians in this study provide leadership within their own institution and to the profession at large. This group is also shaping

the academic library through discussion, debate, and re-interpretation of the roles and purpose of the library.

Table 1 summarizes the demographics of the six libraries with which the university librarians are associated. The table provides comparative statistics that have been shown by researchers to correlate with innovation. The source data comes from the Association of Research Libraries statistics for the 2007/2008 academic year.³ Column A (Size) provides an indication of the relative size of each library based on total staff (FTE). Column B illustrates the percentage of total materials expense relative to total library expenditures. Column C indicates the percentage of professional staff in the library. Column D expresses the total library expenditures per student.⁴

	A Size based on FTE	B Percent⁵ Materials (%)	C Percent⁶ Professional Staff (%)	D Expenditures per Student (\$)
Library 1	Large	38	47	2671
Library 2	Large	40	30	1258
Library 3	Medium	40	30	824
Library 4	Medium	43	37	764
Library 5	Small	43	35	2388
Library 6	Small	50	37	640

Table 1 – Library Demographics (N=6)

³ The ARL statistics for academic year 2007/2008 are available at <http://www.arl.org/stats/annualsurveys/arlstats/arlstats08.shtml>

⁴ Enrollment data is available from the National Center for Educational Statistics at <http://nces.ed.gov/>

⁵ Column B is calculated by dividing materials expense by total library expenditures times 100

⁶ Column C is calculated by dividing the number of professional staff by the total library staff times 100

5.2. *The interview protocol*

Invitations to university librarians were sent via email with the informed consent document attached. If the university librarian accepted the interview, a follow-up email exchange typically ensued with the librarian's administrative assistant in order to establish a time and date. Given the costs of transportation and logistics of scheduling, only one interview was conducted face-to-face. Video conferencing was used in two interviews and the remaining three were conducted using a voice conference. On average, the interviews lasted about one hour, ranging from 55 minutes to an hour and twenty-five minutes in one case. The digital sound track was extracted from the video conference recording or the digital recorder and forwarded to a professional transcription service. Each transcribed interview document was analyzed to remove references that might reveal the identity of the interviewee. Specific references were replaced with generic encoding for categories such as university library, region of the country, organization, project, academic departments, and personal names. The signed informed consent was returned via U.S. Mail and co-signed by the researcher. A copy of this form was offered to each university librarian for their records. Each university librarian was also offered the opportunity to review the transcript. The interviews consisted of a total of 11 questions (Appendix A) and the flow of the interview proceeded from questions regarding management philosophy to more specific questions about innovation and concluded with questions about the future – roles, services, and threats to the academic library.

6. Findings

What are the characteristics of innovation and innovation behavior in academic libraries – RQ1? All interviewees responded to a benchmark question indicating that innovation was a critical process for the library to survive and thrive in the 21st century (Q1 – Appendix A). Although one can imagine that a library leader might conclude that innovation was not an appropriate strategy for the university library, these respondents were unanimous in stressing the importance of innovation. Questions four and eight (Appendix A) clarified these views by eliciting comments on the nature of innovation and individual innovation behavior. These library leaders offered a richly textured view of the innovation process with views that often combined both an individual and organizational perspective as in the following quote: innovation is “. . . the ability to raise new questions and to organize the resources around trying to answer those questions.” As an example of organizational process innovation, a library might create a new position with a mission and support this effort with a specific budget allocation. Another UL⁷ stated that our librarians “are continually asking themselves ‘is there a way we can do this

⁷ The abbreviation “UL” is used for university librarian.

better’?”. They keep “tinkering” with library systems – an approach that can lead to incremental innovation. One UL viewed this incremental approach as having tremendous potential to positively impact user services. Several respondents saw innovation as a synthesis that develops by looking externally, seeing what’s out there, analyzing the pieces, and bringing these pieces back together in new and different ways. One respondent used a particularly apt phrase for this process of bringing something new in from an external organization, describing the library culture as one of being “fast followers”, suggesting a process in which the organization examines and evaluates innovations before adoption. Another perspective related how innovation was the making of something new, at least new to the institution and that innovation needs “private space” to flourish. Individual characteristics that were cited as important included the creation and sharing of new knowledge, being entrepreneurial and trying to penetrate new markets. However one UL drew a sharp contrast between innovation and individual creativity, indicating that the two concepts are quite different.

One can begin to draw a rather positive view of innovation from the above comments. These library leaders have a good grasp of the innovation process and it appears that incremental innovation is ongoing, frequently through a process of bringing in new concepts from other organizations and institutions. As in the following quote, some respondents felt that there was great potential in the quality of the existing professional staff.

“I have no doubt in my mind . . . that the density of understanding of how to use information technology in the academy is far greater in the library than in any other institution on campus, . . .”

The role of the librarian is “to take what we learned as librarians, and the skills, and the philosophical approach to information, our whole values framework, and apply them to helping our communities (i.e. higher education) achieve their goals.”

However, many of the respondents took a less optimistic view, citing some significant obstacles to innovation. One UL articulated the inherent conflict between efficiency and the generation of new ideas. Librarians are trained to follow certain processes – repetitive work that does not lend itself to the generation of new ideas. Another respondent indicated that “libraries are afraid to fail” and the calm and reasoned approach of examining external innovations could also be characterized as one of watching to see “if someone gets fired” and then proceeding after a year or so when the innovation appears to have succeeded. A risk taking behavior is needed where

“obviously, people . . . aren’t afraid to try something and if it doesn’t work, and they won’t feel like they’ll be severely punished.” To counteract these traditional behaviors, one UL stressed the importance of a culture of diversity in which “one is not criticized for outlandish behavior.” Comments on individual behavior also raised some worries. Perhaps most revealing were the comments offered in response to the final question (question 11 – Appendix A) – the major threat to the academic library.

We’re characterized by “. . . short sightedness and the inability to take calculated risks.”

“. . . we’re our own worst enemy - the big threat is ourselves. Especially being unwilling to accept and project ourselves into new environments.”

We are “not ready to raise our hands to take on new roles and responsibilities”

How are university librarians involved with innovation at their institutions –RQ2? How do these university librarians participate in the innovation process? More specifically, one might view this question in terms of creating an environment for innovation and the establishment of policies to facilitate innovation. Responses to question one regarding management philosophy and question seven on policies and practices within the library are particularly relevant to RQ2. Question two addresses aspects of library culture that might stimulate or restrict innovation.

Many of the university librarians described their management style in terms such as collaborative, collegial, participatory, consultative, and empowering as indicated in the following quote: “I believe strongly that everybody at every rung in the ladder has something to contribute to the successful organization.” An example included the monthly UL open invitation to have coffee with any of the librarians or staff. Another UL has recently changed the focus of her management council from reporting status to discussing future roles and having middle managers bring in ideas and concerns that they want to discuss. One university librarian tries to “keep the door open to as much experimentation as possible” but is also willing to “pull the plug” if the project doesn’t work out. One UL noted that innovation might be stimulated by individual initiative from a director or university librarian, perhaps an action motivated more by a desire to make a mark or establish a reputation.

At one institution, there has been a tradition of rewarding people who come up with new ideas and also a genuine effort to allocate part of the library budget for innovative projects. A unique policy approach included a formal, annual assessment process and an associated

assessment office. One might expect that “assessment” could become a bureaucratic obstacle to innovation, however, in this case, the assessment process can help cancel unsuccessful projects and move resources to other potential innovations. Brown bag sessions were frequently cited as effective processes for stimulating thinking about new directions and new approaches. Similarly, one UL stressed the importance of an external focus – “the more I can get people out of the building, out in the library community, out going to conferences . . . , the more likely it is they are going to come back with great ideas.” Relating to stimulating new ideas, one scenario was described in which librarians could effectively brainstorm about the many problems they were encountering, however these same librarians had difficulty in using their creative powers to come up with a solution. The university librarian viewed this behavior as a “mindset” problem and dealt with it by inserting probing questions into the group discussions. Doing small-scale experiments was another useful approach, however only two of the six respondents indicated that part of the annual library budget was set aside for these exploratory or “R&D” like projects.

There were also concerns expressed about the library organization and individual behaviors that might represent obstacles to innovation. One UL’s experience suggested that participatory management style was almost a “foreign concept” and librarians did not recognize that it was their responsibility to speak up. Another UL indicated that it was necessary to “press on a topic” or a specific individual to get a response.

What are the processes and forces that stimulate innovation, or alternatively, act as barriers to innovation – RQ3? Interview question three addresses perceptions regarding the external environment and the relationship with other university libraries. Question six regarding innovation failures provides insight into the forces that might act as barriers to innovation.

The turbulence and change in the external environment can create situations in which the organization must innovate in order to survive. Reductions in budget are notable for resulting in innovative solutions in the library. As two examples, ULs noted that moving to all electronic government documents and improved book shelving were motivated by budget cuts. In one case, a gift fund – an endowment for innovative technology – was cited as being very beneficial in a period of tight budget resources. Several of the ULs discussed the upheaval and disruptive events that had preceded their arrival at the respective institution, noting that that these largely external events restricted innovative activities for extended periods of time.

Functional diversity, as represented by different job titles, has been shown to correlate positively with organizational innovation (Hage & Aiken, 1970; p. 36), the intuitive explanation being that diverse titles and experience bring new knowledge and different ideas into the organization. As an example, one UL had previously held the title of Associate University

Librarian for Public Services and Innovative Technology, an organizational commitment, represented in the job title, to the importance of both technology and innovation. In another library, a position of “coordinator for research and development” was created and staffed by a person with computer science and music degrees, but no MLS. In this case, the UL noted that there was considerable skepticism among the professional librarians regarding this R&D position. Similarly, another UL created a new unit to support digital scholarship. Regarding external organizations, one UL lamented the library dependence on an IT organization that was administratively distinct from the library.

Several of the ULs referenced a concern about librarians taking the initiative and that this was as much a management as an employee problem as indicated in the following: “they were used to being told from the top down what will happen, what the decision is . . .”. There appears to be a reluctance to admit failure, in part because of fear of punishment, and to use these failures as an opportunity for learning.

How is innovation, as perceived by university librarians, affecting scholarly communication, especially with respect to professional roles and specific user groups – RQ4? Is it possible to identify the impact of innovations on the people who ultimately use library innovations – the faculty, staff, and students? Implementation of innovative products and services is frequently motivated by specific needs. Is there evidence that these needs are being met by the resulting innovations? Question five regarding innovative projects and question nine regarding groups that use, and in some ways, help form the innovations are relevant to RQ4. Respondents cited numerous projects that they felt were innovative. Organizational theorists (Damanpour, 1996; Daft & Becker, 1978) will typically classify innovations by type (technical or administrative) and by associated attributes (product or process). Using this taxonomy, library innovations as cited by the respondents are summarized in the Table 2:

	Product	Process
Technical	Archiving research data Compact shelving Faceted browsing in OPACs Information Commons Institutional Repository Publishing e-journals Shared digital repository Shared annexes for storage (so library space can be used in a different way) Shelf-ready books Streaming video to classrooms	Cooperative preservation Copyright advisory office Creation of new standards for e-journal publishing Creating new library services Joint publishing with the university press Leasing library space Library outposts (reference services) Mass digitization Selling library services Service – provide faculty assistance with technology
Administrative	(Innovations would include products that support the administrative structure. There were none cited.)	A revenue producing unit A standing R&D budget AUL for digitization projects Budget reallocation to digital projects Business plans for new projects Digital program office

Table 2 – Innovations by Type and Attributes

In terms of groups that might affect or mold innovations, one respondent mentioned that there is “an increasing distance between the undergraduate and the library.” Another UL stated that undergraduates don’t understand their relationship to the library. And, for graduate students and faculty, these groups rarely come to the library and would like for library systems to be as transparent as possible – “they don’t want us to be in the middle of their information-seeking behavior.” In contrast, another UL indicated that faculty, staff, and students were very much engaged in how the library building space was to be used. Most of the libraries in this study are developing or supporting an institutional repository (IR). IRs were cited as an innovation, however it is clear that the IR is still undergoing considerable change and definition. One UL cited a faculty concern that articles deposited in the IR would not receive adequate exposure. This concern, and possibly resistance to using the IR, results in faculty affecting the design and implementation of the IR and delaying stabilization and use until more appropriate solutions are forthcoming.

7. Discussion

Many of the innovations in Table 2 have been implemented in a majority of academic libraries in the United States. Several of the cited innovations appear routine in today's world, however the specific processes and products were new to the organization at the time of adoption. Although there are likely administrative-product innovations, none were cited. Such innovations might include software products that are brought into the library that can help facilitate the management of a large, complex organization. Several emerging innovations were cited that go beyond the traditional library practices and services. Leasing library space and selling library services are two such technical-process innovations. At one institution, leasing library services created significant revenue that flowed directly into the library's coffers. Similarly, an e-journal project, a partnership with the university press, resulted in a multi-million dollar revenue-producing project. Business plans and a standing R&D budget are administrative-process innovations that are promising but appear not to be widespread throughout the academic library community.

Dual structures for innovation. There is considerable evidence in the UL perspectives that the academic library is moving from a somewhat static organization to a dynamic one in which the rates of innovation are increasing. This trend is evident, not only in the recognition of the need to innovate, but also in the diversity of roles cited and the many incremental innovations. With respect to library culture, this incremental innovation was acknowledged as a positive behavior. However, innovating within an academic library presents an interesting conundrum. Professional norms, symbolic artifacts – the physical building and the book – and the focus on process all contribute to the inertia inherent in the traditional structure of the academic library. Innovation can be viewed on a continuum where dynamic-idea creating organizations generate considerably more innovations than those that are process and static-rule based. Organizational theorists (Damanpour, & Gopalakrishnan, 1998; Daft & Becker, 1978; Duncan, 1976) have proposed theories that explain the types and stages of innovation. The “dual-core” theory (Duncan, 1976) posits that different parts of the organization are better at initiation of innovations as opposed to implementation. When there is a greater need for innovation, dual structures become more important. In order to move to the more innovative end of the continuum, library leaders will need to consider more flexible management approaches for different parts of the organization where certain units become more exploratory and are not directly tied to the processes that are required for delivery of service.

New knowledge. These UL perspectives and the supporting literature clearly suggest that the external environment and the coercive forces resulting from reduced budgets have led to

innovative products and services. From Rogers' model, innovation attributes are apparent in these perspectives, specifically those of complexity and compatibility. The university librarians see most innovation as incremental, not radical, and innovation as occurring with respect to existing systems and thus having a high degree of compatibility with products and processes that are already in place. Mimetic forces originating in formal education and professional networks create hiring and socialization processes that result in institutional members viewing problems in the same way. This trend of homogenization implies that academic libraries are converging toward common structures and organizational processes. This tendency towards sameness minimizes the influx of new knowledge and reduces the rate of innovation, especially radical innovation. Although a library's mimetic behavior can lead to much re-use and many innovations, the comments from ULs suggest an imbalance which leads mostly to incremental innovations.

Administrative innovations. One UL noted that the many innovations in their organization created significant stress on librarians and staff to adapt and respond to the changes in process and structure. Stress can result from the creation of new positions, a greater need for cooperation across the organization, and more sharing of power (Hage & Aiken, 1970; pp. 100 – 103). This phenomenon of stress and conflict is typical in a changing organization and is one that can be valued and turned to advantage by a transformative leader. A by-product of this conflict can be a creative dialectic in which innovation flourishes. However, to prevent conflict from becoming disruptive, library leaders must also introduce appropriate morale boosting initiatives – an area that could benefit from more administrative innovations. Administrative innovations focus on the social structure of the organization and specific areas such as resource allocation and the reward system. In these interviews, there was no evidence of potentially new administrative innovations that might help these leaders deal with the inevitable conflict that will emerge in a more innovative organization.

Business-like processes. Several of the authors cited in the literature (Clayton, 1997; Furst-Bowe & Bauer, 2001; Cameron, 1986) suggest, implicitly or explicitly, that a more business-like model might be appropriate for academic institutions. Libraries exist in a competitive world – vying for budget, assisting the university in attracting students, and countering commercial organizations that offer similar services. Although ULs will likely be wary of a more business-like approach as not befitting of a public, pluralistic organization, there is much that can be learned from these models for use within the library. One significant process innovation for libraries is that of budget allocation or perhaps more properly “budget re-allocation”. The traditions embedded in librarianship along with a culture that is averse to risk

taking make it very difficult to significantly change how budgets are allocated. One university librarian indicated that they have “aggressively re-allocated” budget in order to invest in and develop new services. In this particular library, a significant amount of the acquisitions budget was re-allocated to digitizing resources and to digital preservation. Additional actions that have significant potential are the allocation of a specific R&D budget (cited by two ULs) and the creation of new positions. The diversity of thinking and the resulting research bring new knowledge into the organization – a major antecedent of innovation (Cohen & Levinthal, 1990). As in for-profit firms, the ability to clearly track and assess impact will become increasingly important as libraries become more innovative. Business frameworks for establishing innovation metrics, such as those suggested by Collins & Smith (1999) can help create and sustain a continuous innovation process. Regarding annual budget as an indicator, Budd (1998, pp. 196-198) cites a trend that started in the mid-1970s in which the academic library budget began to shrink as a part of the parent institution’s educational and general expenditures. Although there are many environmental factors that contribute to reduced budget, the budget trend can be interpreted as a measure of competition within the larger institution and also as a lessening of demand for library services. A very positive indicator of performance, and perhaps innovation, would be an increase in the library’s budget as a percentage of the university budget.

Leadership. Most of the UL comments related to their roles as managers and establishing processes that might facilitate innovation in the organization. However, there was little discussion or introspection about how they might undertake a leadership role to facilitate major change. In these interviews, the concept of changing culture was not addressed explicitly. In a turbulent environment, managers and organizations must be ambidextrous – able to implement both incremental and revolutionary change (Tushman & O’Reilly, 1996). In this environment, multiple cultures are needed and a manager’s role becomes one “of a symphony conductor rather than a general.” There will always be resistance to innovation and the resulting organizational change in the organization. This creative tension can be very positive, but library leaders will need to articulate how differing cultures and seemingly conflicting goals can ultimately benefit the organization. Appropriate recognition and reward systems can help in this regard. Finally, it should be noted that organizational theorists (Hamel, 2006; Nadler & Tushman, 1990) have recommended that innovation must be an integral, sustained process for organizations to thrive over the long term. Library leaders can begin to create this sustained process by identifying innovation as a strategic initiative and promulgating this strategy throughout the organization.

7.1. *Limitations*

This research follows a case study approach to gain insight into how university librarians perceived innovation. Although the sample is small, the findings presented here suggest that future empirical research will need to be tightly conceptualized to avoid conceptual and methodological errors. In contrast to manufacturing organizations, the institutional framework of the university and the research library impact innovation differently. In this environment, leadership is perhaps more significant in helping change the culture and break out of the limiting structures created by the norms of the profession. Since organizational size may be a proxy for other conditions, the size-innovation relationship should be carefully considered in future research endeavors. Table 1 offers some insight into this issue. The size of the organization based on FTE is shown in column A. In column B, there is an increasing progression from the large library to the smallest in the percentage of total budget that is allocated to materials. Perhaps the most notable aspect of this table is in the comparison of the size metric used in column A and a different size metric (expenditures per student) in column D. Using this metric, Library 5, a small library by FTE, becomes the second largest in the group of six. Perhaps size as measured by expense per student is a more consistent predictor of innovation in academic libraries.

With the limited sample size in this study, generalizations cannot be attempted for organizations beyond academic libraries. However, given the homogeneity of many research libraries, it is expected that the observations reported here will be relevant for many of these libraries. Regarding methodological issues and the unique conditions cited herein, future researchers should be cautioned about generalizing to other service-based organizations or even other non-profit institutions. The institutional framework and the many years of bureaucratization in academic libraries are not conditions typically found in other non-profits such as health, welfare, and government agencies. It is noteworthy that the innovation literature recognizing non-profits as a separate sector is just beginning to emerge (Bode, 2003; Anheier, 2009). Finally, it should be noted, that respondent bias is obviously a factor when questions are asked of leaders and their leadership styles. An empirical study can address this issue by obtaining responses from the staff and professionals regarding their perceptions of leadership.

7.2. Further research

Although the research reported here has shed light on important aspects of innovation in academic libraries, there are interesting questions that remain and can be studied from either a qualitative or quantitative perspective. What are the important leadership profiles, including personal competencies, which might facilitate innovation in academic libraries or, alternatively, inhibit innovation? In a turbulent external environment, what are the trigger events that motivate major change as opposed to continued incremental innovation? Are there group leadership

models with less hierarchy that might work for academic libraries? What are the important new types of knowledge – an important antecedent of innovation - that are needed and how can this knowledge be developed?

Regarding empirical studies, there are unique aspects of the academic and institutional environment that should be examined further. Many institutions provide faculty tenure for librarians. Tenure status may provide a degree of autonomy and independence that will positively affect innovation. Similarly, the ability to obtain grants may affect the innovativeness of academic libraries. Although many libraries do not have standing R&D budgets, it is likely that much new knowledge is developed by using grant funds. This new knowledge is especially important to implement more radical innovations.

On a broader scale, it would be very interesting to ask how the academic library contributes to the innovativeness of the parent institution. What are the cause and effect directions? Does an innovative library positively affect the innovativeness of the institution or does the effect act in the opposite direction? Understanding this relationship will help practitioners define the new roles of the library in the institutional environment of the 21st century.

8. Conclusion

Many professionals who are not familiar with the complexities of innovation remain baffled as to why great ideas are not routinely implemented, quickly achieving a high level of acceptance from the targeted user community. Researchers have frequently studied innovation by concentrating on a single dimension such as organization complexity or size. In addition, much of the literature has focused on the for-profit, business sector leaving many questions for the academic institution that require further research. Although prior studies have contributed to the collective knowledge base, the understanding of the complexity of innovation requires a more multi-faceted approach. By using supporting theories and the interview process, this study has highlighted the differences and similarities perceived by university librarians as they commented on the many dimensions of innovation – leadership, organizational structure, professional values, and the characteristics of the innovation itself.

As many organizational theorists have suggested, senior leaders must motivate and lead organizational change. More flattened structures and transformational styles that empower organization members will undoubtedly create a more innovative environment in the library and increase the flow of new ideas. To sustain this environment, library leadership will need to create strategies that support both traditional services and exploratory activities that hold the promise for creating totally new services. These strategic changes will likely necessitate a different business

model, perhaps one with more revenue generating services and more business-like indicators of performance. The greatest challenge for academic library leaders will be in creating the proper balance and minimizing the inherent conflict between exploratory efforts and the more traditional activities that support existing services.

This study has demonstrated the complexity of innovation and the importance of innovation as perceived by university librarians. Continued change and opportunity are evident in these leaders' comments and it is hoped that this study will encourage further research and serve as motivation for practitioners to continue to examine their respective organizational structures, the surrounding environment, and leadership styles.

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Appendix A – Interview Protocol with Prompts

1. Briefly introduce yourself in terms of your background, experience, and management philosophy.
 - a. *A basic question: do you think that innovation is important or critical for the success of the continuing success of the academic library?*
 - b. *How has your philosophy been supportive of innovation?*
2. How would you describe the management culture in your library?
 - a. *Is there a specific innovation management strategy that you have observed as successful?*
 - b. *Another indicator relates to the strict adherence to predefined roles? Do you see impediments to flexibly defining roles? What are these impediments?*
 - c. *How is the library changing with respect to formality and centralization/decentralization?*
3. How does your library differ from other similar libraries and what are the unique characteristics of your library? *(I don't expect you to be an expert . . .)*
4. How would you characterize or describe innovation?
5. *(Looking around at other libraries and your own library . . .)* What are projects, either current or historic, within an academic library that you consider innovative? What are the characteristics that make these projects innovative?
 - a. *Can you comment on the pace of innovation?*
 - b. *Is innovation radical or incremental?*
6. Can you think of potentially innovative projects within the academic library that have been unsuccessful?
 - a. *What are the barriers to innovation?*
 - b. *What are the professional and external forces that might be accelerating or inhibiting innovation?*
7. Please describe policies and practices within your academic library that have facilitated innovation. *How can a creative, unorthodox idea – the germ of an innovation – be supported?*
8. Based on these observations, what do you consider to be important innovation behaviors? *(Some have observed that many library innovations do not originate in the library.)* Can you think of innovations that have been wholly conceived with an academic library? What groups have innovated?

9. Innovations are typically relevant for specific social groups. What are the relevant social groups (users) for academic libraries and how are these groups changing?
Can you comment on whether there are entirely new groups emerging in the university?
10. The following quotations, covering a period of over 40 years, convey certain assumptions about libraries and librarians. What is your response to these quotations?
 - a. Librarians are cast as “reluctant followers who have failed to see the deeper meaning of what they do and have thus been unable to raise their activities to the level of a true profession”. (Shera, 1965)
 - b. “To succeed – and indeed to thrive – in this new environment, academic libraries must immediately initiate a self-examination. Every assumption, task, activity, relationship, and/or structure has to be challenged.” (Stoffle, C., Renaud, R. & Veldof, J., 1996).
 - c. Librarians need to “. . . create a range of services unthinkable in the twentieth century, but mandatory in the twenty-first century, if we are to provide society with the value added services it will need from its professionals.” (Martell, 2000)
11. Summing up, what do you view as the major threat or threats to the continued success of the academic library?