Knowledge Management for Service Innovation in academic libraries: A qualitative study

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Abstract.

Purpose: This exploratory study investigates the strategies that librarians employ to ensure quality of service, the ways and barriers for service innovation, and the likelihood of adopting knowledge management for service innovation in libraries.

Methodology: Seventeen academic librarians filled out a qualitative survey with open-ended questions.

Findings: Most librarians saw service innovation as critical to the continuing success of the library, and felt that knowledge management would be extremely helpful for service innovation in their libraries. The proposed strategies and findings led to a theoretical framework of knowledge management for service innovation in libraries (KMSIL).

Originality/value: Though exploratory in nature, this is the first study that combines service innovation with knowledge management from the perceptive of academic librarians and has

important implications for theory and practice. The proposed theoretical framework could serve as the basis for a deeper study and further research in this area.

Keywords

knowledge management, service innovation, library innovation, theoretical framework, KMSIL.

Article classification. Research paper

INTRODUCTION

Academic libraries are facing a number of challenges, including unsustainable costs, declining usage, transition into digital services and increased demands for new services (Johnson and Lilly, 2012). For the library to remain relevant to its users, it must redefine its role in the digital environment, leverage its strengths, and innovate to create responsive and convenient services (Li, 2006). Other organizations facing similar challenges are embracing knowledge management (KM). This helps increase service performance, innovation, and competitive advantage (Adams and Lamont, 2003). Libraries will need to adopt KM to provide innovative library services. This becomes even more pertinent in the age of connectivity, mobile usage, huge digital data, and an increasing mix of digital and physical worlds, where knowledge is not just managed by a library (books or periodicals) but created within the library. Thus, libraries need to leverage employee and user knowledge, along with rapidly evolving technology. While there have been limited studies on KM in libraries, none have combined service innovation and KM in the context of academic libraries. This exploratory study investigates the role of KM, particularly knowledge of a) the user, b) innovation possibilities and c) barriers, in facilitating service innovation. The following research questions guide the study:

RQ1. How do librarians understand quality of service and service innovation? What are the strategies they employ to ensure quality of service?

RQ2. What are the ways and barriers for the library to continue to innovate in providing service quality?

RQ3. To what extent do they think that KM will help the library in service innovation?

RQ4. Would their library employ KM for service innovation?

LITERATURE REVIEW

Service Innovation in Libraries

Service innovation may refer to new service design and development, innovation in processes, and organizational innovation (Miles, 1993). It can be related to changes in: the concept of a service, the client interface, the delivery system or technological options (Heskett, 1986; Miles, 1993; Hertog, 2000). It creates value for customers, employees, business owners, alliance partners, and communities through new and/or improved service offerings/processes/business models (Ostrom *et.al.*, 2010). A few in-depth studies of innovation in academic libraries have contributed significantly to the accumulated knowledge on this area. Howard (1977) presents an analysis of the impact of organizational structure on the rate of innovation. White (2001) found that the size of the library is positively related to innovation in digital reference services. Sheng and Sun (2007) advocate developing a knowledge innovation culture. Other recent studies on service innovation in academic libraries focus on innovation ideas (Jing and Jin, 2009), multiple facets of an innovation strategy (Rowley, 2011), customer role for service innovation (Cupola, 2010), emerging technologies and innovation in digital library (Cervone, 2010), and leadership, organizational size, complexity, and environmental factors (Jantz, 2012). However, while these studies have looked at organizational aspects, they do not investigate the core concept and

dimensions of service innovation adequately. Service innovation in libraries can mean new/improved technology or interfaces, improved services, outreach or organization methods, and other continuous work for patron satisfaction.

Knowledge Management (KM) in Libraries

Nonaka and Takeuchi (1995) define KM as the capability of 'a company as a whole to create new knowledge, disseminate it throughout the organization, and embody it in products, services and systems' (p.3). KM in libraries can improve communication among staff/management, and promote a culture of sharing. It can make libraries more effective by enabling user-focused solutions and eliminating redundant procedures. Finally, it can help improve efficiency by reducing response time. All these lead to reduced costs, increased performance and a more satisfied library staff, as well as the user. The few studies on library and KM have focused on academic libraries (Townley, 2001; Maponya, 2004), need in libraries (Wen, 2005), the relationship between KM and library (Roknuzzaman and Umemoto, 2009; Sarrafzadeh, Martin and Hazeri, 2010), librarians' awareness or perceptions (Siddike and Islam, 2011), knowledge sharing behavior (Islam, Ikeda and Islam, 2013), KM in state-of-the-art digital libraries (Islam and Ikeda, 2014) and mapping KM tools to KM cycle for libraries (Agarwal and Islam, 2014). Branin (2003) describes how the Ohio State University Library took a broad and evolutionary approach to KM by responding to new types of digital information assets created on campuses and among individual faculty and students. Maponya (2004) carried out a case study of the KM practices in the University of Natal, Pietermaritzburg Library, South Africa. The library focused on partnerships and collaboration with other libraries to acquire knowledge. White (2004) conducted a case study of the KM culture at the Oxford University Library Services. The study found that the library had an effective knowledge acquisition culture. It focused on mentoring of new staff, monitoring of

intangible assets, etc. Despite limited implementations and varying perceptions of the Library and Information Science (LIS) community towards KM, most researchers view it positively and call for full involvement of LIS practitioners in KM (Abell and Oxbrow, 2001; Southon and Todd, 2001).

Theoretical background – KM for Service Innovation in Libraries

The service innovation capability of a library depends on its employee as well as customer knowledge and skills, culture, IT adoption, and routines of new service development (Rowley, 2011). The role of KM in innovation and competitiveness (Storey and Kelly, 2002; du Plessis, 2007) and in providing customer knowledge for service innovation (Xu, 2011) leads us to three viewpoints, which provide the theoretical background for this study:

Looking externally:

1) Developing knowledge of customer needs through librarian-patron interaction. Customer knowledge is a major element of KM. Xu (2011) conceptualizes customer KM as the utilization of knowledge for, from and about customers to enhance the customer-related capability of organizations. In academic libraries, knowledge for patrons includes knowledge on services, timing, etc. Knowledge about patrons includes met and unmet user needs.

2) Developing librarian's knowledge of innovations and what's out there or what's possible. Library employees need to generate creative and implementable ideas based on their knowledge from direct customer contact. However, this needs to be supplemented with the librarians' own knowledge, learning orientation (Gray and Meister, 2004), critical thinking ability, and continuous learning from external and internal sources.

Looking internally*:*

3) Analyzing the pieces (the needs and the possibilities) and synthesizing / bringing them back together in new and innovative ways – service innovation. During interaction with patrons, employees collaboratively co-create value (Echeverri and Skalén, 2011). This knowledge, when combined with the knowledge of possibilities, and analyzed strategically gives rise to innovative solutions and approaches. Hertog (2000) identifies 4 dimensions of service innovation that help meet patron needs: 1) service concept, 2) client or patron interfaces 3) service delivery system and 4) technological options. It is likely that the solutions arrived at will be some combination of these 4 dimensions. Using KM for service innovation, libraries will be able to collaborate more, reduce service complexity and increase innovation possibilities by integrating internal and external knowledge and making it available and accessible to its patrons and all other stakeholders.

METHODOLOGY

We relied upon the qualitative survey method for collecting data, with open-ended questions sent to librarians via email.

Study population and sample

The study population was academic libraries in ten countries. We compiled the email addresses of librarians in the UK, USA, Canada, Australia and in other countries (Bangladesh, Denmark, India, Italy, Malaysia and Norway) where universities were found using web search. We also compiled the mailing list addresses of the International Federation of Library Associations and Institutions (IFLA) KM section and the Association for Information Science and Technology (ASIS&T) Special Interest Group on KM (SIG-KM). As the study was exploratory, including KM-specific lists was likely to elicit positive responses from people who are aware of KM, though a more in-depth study should distinguish responses from KM and non-KM respondents. The purpose here

was to reach out to a wide pool of academic librarians from different countries. The method of sampling was purposive.

Interview protocol and data collection

The instrument was pre-tested by two researchers who filled out the questionnaire to check for any question wording issues, and suggested minor changes. The questionnaire and study design were approved by the <anonymized> Institutional Review Board. A web-based version of the instrument was created using Google form. Nine open-ended and five structured questions were designed. Survey questions were made of two constructs – service innovation and KM for service innovation in libraries. There was a mix of self-developed questions and ones adapted from prior studies such as Clayton (1997); White (2001); Moyo (2004); Popadiuk and Choo (2006); Scupola and Nicolajsen (2010); Jantz (2012). About 70 personalized individual emails with a link to a web-based questionnaire (including informed consent) were sent out to university librarians inviting them to participate in this study, as well as mails to the 2 mailing lists. In total, 17 librarians from 10 countries (USA 7; UK 2; Australia, Bangladesh, Canada, Italy, Malaysia, Serbia, Sweden and Uganda 1 each) filled out the questionnaire. Even though the study population was global in reach and we expected a better response, the outcome was very small. The response rate was about 24.29 after multiple follow-up emails and efforts at reaching out. While the sample size was small, it was deemed sufficient for a first, exploratory study. Data was gathered from January-April, 2014.

Analysis

For the analysis, we entered all the data in an Excel spreadsheet and came up with candidate categories for each question to synthesize the findings. Three kinds of coding (Corbin and Strauss, 1990) were carried out. Open coding included an initial pass through the data to come up with

candidate concepts for categories. After an initial level of analysis, categories were combined into major categories (axial coding). Finally, the focus shifted to core categories (selective coding). Categories were reconciled for inter-rater reliability.

FINDINGS

Service Innovation in Libraries

RQ1. How do librarians understand quality of service and service innovation? What are the strategies they employ to ensure quality of service?

SI 1. Service Innovation is critical to the continuing success of the library

While 24% of the participants (4) agreed, 71% (12) strongly agreed that service innovation is critical. One respondent chose to neither agree nor disagree.

SI 2. What are the strategies that your library employs to ensure quality of service? What are the things you do well? Most respondents gave more than one option, which were coded into separate categories (Table 1), leading to 37 coded responses by the 17 respondents. The numbers within brackets indicate the sum total for all responses in that category. Being user-centered and ways to increase staff efficiency were the top strategies listed.

Table 1. Library strategies to ensure quality of service

Being user-centered (18)

- *"survey users on current and potential services"*
- *"exploring organizational restructuring and retooling to better meet user needs (struggling)"*
- *"embed users as co-producers as it is the critical to success of any services"*
- *"define user needs and rewarding customers"; "continuous assessment of customer feedback"*
- *"new customer interface (discovery)"*

Increasing staff efficiency (10)

- *"reassess each position that becomes vacant and allocate staff based upon our strategic plan that is aligned with the University"*
- *"educating librarians with research experience"*
- *"retool backroom functions to make them more efficient"*
- *"training and retaining of personnel"*

Technology (5)

- *"ICT systems that are robust and do not crash frequently"*
- *"leveraging online access for better communication"*
- *"increasing digital content"*

Piloting / scaling-up (3)

- *"Work on small project to ensure that idea is workable, then roll out to larger and larger groups until it is a library wide procedure /standard"*

Openness (1)

- *"We have limited staff and resources, but an open environment for trying new things."*

SI 3. How does your library differ from other similar libraries, and what are the unique characteristics of your library?

There were 16 responses stating what sets their library apart from other libraries. These were coded into separate categories (Table 2). A majority of the respondents liked to see themselves as innovative or responsive.

Table 2. Unique characteristics of the library

Innovative/responsive (6)

- *"We are one of the few libraries with a distinct marketing and communications department"*
- *"We are futuristic in approach when it comes to technological innovations"*
- *"We are bilingual and offer all services and collections in both French and English"*

Good size / collection (4)

- *"I believe our collections are unique and really set us apart from other libraries."*
- *"We have a very strong manuscript collection which is unique in this part of the world"*
- *"It's the largest academic library in the country, and is the leader in the field"*

Nimble / dynamic (2)

- *"forward looking, risk taking and very digital in nature"*
- *"We have no preconceived ideas of what a library's role is and therefore are nimble in adopting new or changed roles"*

Services on par with other libraries (2)

- *"We are similar to most ARL* [Association of Research Libraries] *libraries although we are very conservative in managing risk and copyright"*
- *"In terms of services, I believe we are on par with most of our peers"*

Value people (2)

- *"We believe so much in training and retraining as well as recruitment and retention of the best librarians around"*
- *"The majority of our librarians and staff have been with us less than 10 years (due to a large number of retirements)".*

SI 4. Please provide examples of current and ongoing innovative projects in your library (e.g. library as a place, seating, signs, learning commons, books, technology, technology-free areas, etc.)?

There were 21 responses by the 17 respondents. 5 unique categories of current and ongoing innovative projects emerged during the coding (Table 3). Adopting new technologies was strongly tied to innovation in 7 responses.

Table 3. Current and ongoing innovative projects in the library

Adopting new technologies (7)

- *"pilots of new services (iPad lending)"*
- *"We have lots of small projects to test out new tools and a digital petting zoo"*
- *"wireless library, Group works for technology, signs all around, free computer identifier all over the library, 3D animation lab as well as data management center"*

Collaboration / Integration with non-library services (4)

- *"integration of library resources into course ware"*
- *"close collaboration with other 21 academic libraries in the province (Scholars Portal - scholarsportal.info)"*
- *"took over copyright for the University"*

New search/discovery interface (4)

- *"Granted we are not the innovators, we are working on implementing a search interface that will search all the library materials, physical, digital and electronic resources. I find that all library websites have the same problem, a page full of links to various search interfaces making it confusing and difficult to find library materials".*

Being user-centered (3)

- *"Most of our innovation is using common tools/strategies in ways tailored to our community and specifics of our environment"*
- *"library is open from 7am to 2 am (24/7 during exams)"*

Providing makerspaces / learning zones (3)

- *"We offer education on using e-books, new spaces for team work and discussions, we serve as a meet up spot for Courserans, we offer LibGuides (the only in the region), etc."*
- *"library refurbishment, learning zone (common), digital strategy, digital by default, flipped learning, etc.".*

SI 5. Which team(s) or department(s) in your library do you think is (are) the most innovative?

Each of the 17 respondents provided one answer listing the most innovative library team or department (see Table 4). Communication services and digital services were listed as the most innovative departments.

Table 4. Most innovative library departments or teams

Communication services (5)

- *"reach out to a diverse group of libraries to see what they are doing differently than us"*
- *"planning and development"*

Digital services (5)

- *"The digital teams are great at reaching staff new tools that can make library work more innovative to use"*
- *"I think the institutional repository development team is the most innovative".*

All teams (2)

- *"All teams work with each other so none of us is more or less innovative. We work together"*
- *"We have some creative people across each department; the creative people tend to collaborate together across departments".*

Research / reference services (2)

- *"research collaboration and support team"*
- *"information resource management, reference and liaison dept."*

KM team (1)

"knowledge management team (one staff)"

SI 6. My library has implemented the following technological innovations, RFID, E-books, digital library, mobile apps/Website, online research assistance, presence in social media, e.g. Facebook, Twitter, library kiosks, workshops on using online resources, others

The respondents checked the following technological innovations.

Table 5. Technological innovations in libraries (N=17)

Name of technology	Frequency	Percentage
E-books	14	16%
Online research assistance	14	16%
Mobile apps/website	13	15%
Presence in social media (e.g. Facebook, Twitter)	13	15%
Digital library	12	13%
Workshops on online resources	10	11%
Library kiosks	4	4%

RFID	3	3%
Other	6	7%

Service Innovation in Libraries

RQ2. What are the ways and barriers for the library to continue to innovate in providing service quality?

SI 7. What are the ways for the library to continue to innovate in providing service?

There were 26 responses (coded into 5 categories) by the 17 respondents (Table 6). Incorporating best practices and focusing on collaboration were listed as important if the library were to continue to innovate.

Table 6. Ways for the library to continue to innovate

Best practices and strategies (8)

- *"generate ideas using different innovative approaches"*
- *"Involve end users to consume your applications APIs to generate new and innovative applications and enhance service quality automatically"*
- *"looking at best practices from around the world and trying to replicate or improve upon"*

Collaboration (7)

- *"collaboration with other sectors in the University (e.g. Financial Research Lab with School of Management)"*
- *"co-operating with e.g. Grants and innovation office, communication department or other parts. Create courses with the research board, teach information seeking/information literacy".*

Organizational restructuring (4)

- *"organizational restructuring and retooling"*
- *"establish a separate unit for R&D and provide integration with the more traditional units"*

Evaluation and service assessment (4)

- *"Listening, whether by trends, complaints, or assessment. We have to notice patterns and address them"*
- *"in reading users' awareness by presenting new interfaces and possibility of exchange"*
- *"asking users what they want from the library"*

Staff expertise/training (3)

- *"training program for all staff"*
- *"It also relies on staff expertise and ideas - approximately 10% of staff are innovative and creative".*

SI 8. What are the things that you would like to implement but haven't been able to?

The 18 responses here were coded into 5 categories (Table 7). Having a research, discovery or digital repository was the most frequently cited, followed by mobile and other technologies.

Table 7. Strategies in the wish list of the library

Research/discovery/digital repository (6)

- *"We are in the process of implementing a digital repository"*
- *"fully automated catalogue"*
- *"federation searching across all open ETD (dissertations) sites"*
- *"federated searching across institutional repositories (e.g. those in your school's conference)"*

Mobile and other technologies (4)

- *"renting tablets and e-readers, offering 24/7 online assistance, RFID, cafe at the library, etc."*
- *"mobile app/website"*
- *"library kiosks"*

Infrastructure / efficiency (3

- *"Improvements to facilities and increased capital funding. For example, we have an old building that is not wired for the increase in technology in most parts"*
- *"distribution of the workload among involved departments"*

Outreach / services (3)

- *"better outreach and connection with international students"*
- *"more events in the Libraries, especially the branch-more exhibits, receptions for departmental faculty, etc."*

Embedded Librarian (2)

- *"Online research assistance will be coming shortly, and RFID may be implemented in medium term"*
- *"we would like to work with embedded librarian - in other words librarian embedded in the research process".*

SI 9. What are the barriers to service innovation that your library faces (e.g. lack of resources, staff crunch, work culture issues, processes, communication issues, etc.)?

The 21 responses here were coded into 5 categories (Table 8). Not having enough staff or enough expertise for innovation was cited as the biggest barrier. 6 respondents cited lack of funding or resources as a barrier.

Table 8. Barriers to Service Innovation in the Library

Inadequate staff/expertise (8)

- *"We need people in all units who are willing to move beyond the restrictions of the profession (e.g. degree requirements)"*
- *"Staff crunch is the biggest. There are a lot of projects my department can work on, but our capacity to take on large projects is limited.*

Lack of funding / resources (6)

- *"lack of financial support"*
- *"lack of resources"*

Lack of sharing culture (5)

- *"lack of collaborative working mode"*
- *"researchers not always involved in our projects, etc."*

Copyright issues (1)

- *"Another huge barrier is copyright. Online resources are our future and libraries need clear direction and possibly some exceptions from copyright law"*

Leadership (1)

- *"We need leadership that works together to support innovation"*

KM for Service Innovation in Libraries

RQ3. To what extent do they think that KM will help the library in service innovation?

KMSI 1. To what extent do you think KM will help your library in service innovation?

One respondent skipped this question. Of the rest, 8 felt that KM would be helpful, while another 7 felt that KM would be extremely helpful for their library in service innovation (94% in total). 1 participant felt that KM would not be helpful.

KM for Service Innovation in Libraries

RQ4. Would their library employ KM for service innovation?

KMSI 2. Is your library likely to employ KM? Why or why not?

These responses were coded into the categories of 'likely to employ', 'employ partially' and 'not likely to employ' (see Table 9). There were 26 responses. A majority stated that the library was likely to employ KM.

Table 9. Likelihood of the library to employ KM

Likely to employ (14)

- *"Yes, we believe KM could help in service innovation"*
- *"We do questionnaires about the library to continue develop our services and to be able to use our resources more effectively"*
- *"Yes, we are already employing it as much of what we do is research driven. If the data is there to show need then we work towards implementing it*

Employ partially (8)

- *"We are using tools for KM, including SharePoint and Confluence. However, KM needs to be embedded in the daily work of each team and we have not reached that state yet"*
- *"It's already done to some extent, but more could be done (and it would probably be supported)".*

Not likely to employ (4)

- *"Not very likely or not for some time. Staff is spread thin and despite the obvious long term payoff has limited time to devote to careful reconstruction of this information"*
- *"I think especially with the state that the economy is in with tightened budgets the costs, including staff time taken to learn new systems and the constant retraining to keep up to date with the updates to ensure compatibility with all the other software being used may actually turn out of me more of a hindrance than a help and may only benefit the people selling the tools than the libraries themselves."*

DISCUSSION

RQ1-2. How do librarians understand quality of service and service innovation? What are the strategies they employ to ensure quality of service? **What are the ways and barriers for the library to continue to innovate in providing service quality?**

As suggested by Metters *et al.* (2008), the librarians interviewed recognized the importance of change and innovation, with most agreeing that service innovation is critical for the continuing

success of the library. Table 10 summarizes the responses by the librarians about what sets them apart and the strategies they employ to ensure quality of service and service innovation.

Table 10. Strategies employed for service innovation

Strategies employed	Unique characteristics of the library	Current and ongoing innovative projects
Being user-centered (18)	Innovative / responsive (6)	Adopting new technologies (7)
Increasing staff efficiency (10)	Good size / collection (4)	Collaboration / Integration with non-library services (4)
Technology (5)	Nimble / dynamic (2)	New search / discovery interface (4)
Piloting / scaling-up (3)	Services on par with other libraries (2)	Being user-centered (3)
Openness (1)	Value people (2)	Makerspaces / learning zones (3)

We can conclude three significant takeaways from the table. First, there is a big focus on being user-centered and responsive to user needs. This is consistent with the first part of our theoretical lens that focused on looking externally i.e. developing the knowledge of customer needs through librarian-patron interaction. It also ties in with most service innovation studies that recognize user involvement as a key part of service innovation (Goldstein, *et.al*., 2002; Magnusson, Matthing and Kristensson, 2003). As discussed earlier, the concept of a service, the client interface, the delivery system and technological options are the four dimensional features of Service innovation (Hertog, 2000). Most of these dimensions deal with customer needs, customer satisfaction, what is to be done for the customer, and how it is to be achieved (Heskett, 1986; Miles, 1993; Hertog, 2000). The findings are also consistent with Scupola and Nicolajsen (2010) who saw unexplored possibilities for customer involvement in library service innovation.

Among other findings, libraries are increasingly being seen or remodeled as spaces for synthesis, integration, makespaces and learning zones where people gather not just to consume content, but to discuss and collaboratively create content (third column in Table 10). The characteristics of being innovative, responsive, nimble and dynamic in the findings (second column) are consistent

with the second part of our theoretical lens that focus on looking externally i.e. developing librarians' knowledge of innovations and what's out there or what's possible. All the findings in Table 10 are consistent with, and some combination of the four dimensions of service innovation discussed earlier (Heskett, 1986; Miles, 1993; Hertog, 2000).

The respondents identified communication services and digital services among the most innovative departments. This is likely because these departments facilitate user interaction, and the service innovation dimensions of the client interface and technological options (Hertog, 2000). The technological innovations which most libraries had implemented (e-books, online research assistance, mobile apps/website, presence in social media, and digital libraries) map to the technological solutions and possibilities as per Hertog (2000)'s dimensions.

Table 11 above summarizes the opportunities and barriers for service innovation. Employing best practices, collaborative approaches, assessment and evaluation were identified as some of the opportunities and ways to move ahead with innovation.

Table 11. Opportunities and barriers for service innovation

Ways to continue to innovate	**Desirable but not yet implemented**	**Barriers to service innovation**
Best practices / strategies (8)	Research / discovery / digital repository (6)	Inadequate staff / expertise (8)
Collaboration (7)	Mobile and other technologies (4)	Lack of funding / resources (6)
Organizational restructuring (4)	Infrastructure / efficiency (3)	Lack of sharing culture (5)
Evaluation and service assessment (4)	Outreach / services (3)	Copyright issues (1)
Staff expertise / training (3)	Embedded Librarian (2)	Leadership (1)

These call for a forgiving leadership (Jantz, 2012), and a focus on people – with employee training and continuous development of expertise. Technology and infrastructure (as studied by Dalbello, 2005; Cervone, 2010) call for additional resources, which is a barrier many libraries face.

However, the limitations and perceived crisis often provide great impetus for pooling in existing resources for innovation i.e. making the best of what you have. This requires changes in attitudes (Musman, 1982; Clayton, 1997) and bringing in a knowledge-sharing and collaborative culture (Sheng and Sun, 2007).

RQ3-4. To what extent do they think that KM will help the library in service innovation? Would their library employ KM for service innovation?

Almost all the respondents felt that KM would be extremely helpful for the library in service innovation. As the study includes people who may or not be familiar with KM, this is a significant finding (especially if it were to include more people unfamiliar with KM). This points to the increasing role and acceptance of KM in libraries and in the Library and Information Science community. In an interview of 10 library practitioners, Roknuzzaman and Umemoto (2009) had found that the ways of knowing and degrees of understanding of KM concepts among the library practitioners are varied, and that most library practitioners have focused on a shallow perception of KM for its incorporation into library practice – dealing with only explicit information and/or knowledge. They also found some of the reasons for responding to KM, e.g. increasing value of knowledge in the knowledge economy, role of information technologies and opportunities for improved library practices.

Our study adds to that list by linking KM to service innovation. Du Plessis (2007) identified 3 main drivers of the application of KM in innovation: 1) to create, build and maintain competitive advantage through utilization of knowledge and through collaborative practices; 2) knowledge is a resource used to reduce complexity in the innovation process; 3) integration of knowledge both internal and external to the organization (or library), thus making it more available and accessible. Knowledge and KM fulfils a number of functions in the innovation realm (Du Plessis, 2007). The

first is enabling the sharing and codification of tacit knowledge as a resource for innovation. The second is the role of explicit knowledge and the capability to convert tacit knowledge to explicit. The third is the enabling of collaboration and collaborative relationships, which are crucial for innovation. The fourth function is of managing various activities in the KM cycle of creation, gathering, sharing, leveraging of knowledge, etc., which allows for timely insights and sense-making for the innovation process. The fifth is of ensuring that the knowledge remains available and accessible, to aid in the innovation process. Thus, KM creates a culture conductive to innovation and creativity. It helps create a culture within which the value of knowledge and application thereof is identified and communicated. Such a culture encourages knowledge based processes and programs, such as innovation. (Du Plessis, 2007). In academic libraries, incorporating KM would lead to creation and innovation, with new service outcomes. Managing the tacit and explicit knowledge of both library employees and users is important. This helps create new knowledge, and an environment for creating new or improved tools and library services for user communities. To do this, libraries need to increase collaboration and interaction both amongst employees and between the employee and the user. This will enable service workers to proactively understand, assess and respond to user needs through continuous innovation in services. The wide support for KM as seen in this exploratory study is significant, and shows that libraries environments are ripe for KM to be implemented. Many respondents pointed to KM approaches already implemented in their library, while some listed barriers to implementation. These findings point to the time, budget and resource constraints that libraries increasingly face, which makes the implementation of KM and innovation in services even more imperative. Libraries need to work on tackling these barriers for KM implementation and the resulting service innovation to be effective.

Theoretical framework.

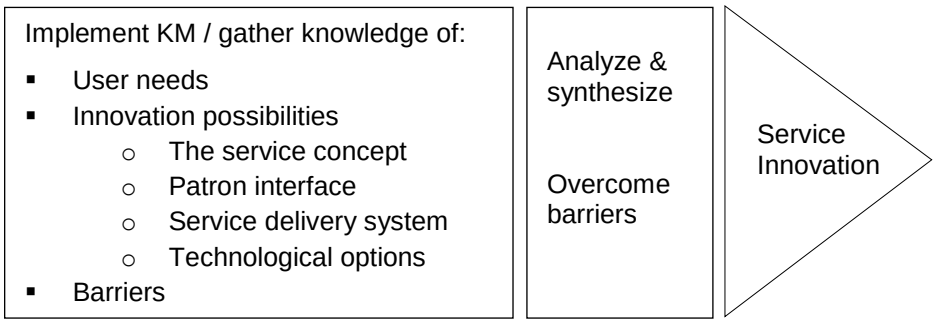

Figure 1. A theoretical framework of KM for Service Innovation in Libraries (KMSIL)

Even though the same size was small and the study exploratory, we can draw some useful insights from the findings. We use our theoretical background and findings from the study to propose a theoretical framework of knowledge management for service innovation in libraries (Figure 1). The framework is to be seen from left to right. For any change management or service innovation, being response to user needs and continuously gathering knowledge of those needs is important. This can be done through evaluation and assessment, staff-patron interaction, and through outreach (either in person or using social media). However, one cannot only be limited by user needs. Had Steve Jobs focused only on user feedback, the iPad would never have been innovated. Along with user interaction, library staff must also keep themselves informed of innovation possibilities. This can be achieved by looking at peer libraries, attending conferences, workshops, webinars and reading latest research in KM and library journals and following innovative developments through social media such as Facebook groups and Twitter. Based on the findings of our study, these innovation possibilities include being user-centered, nimble and responsive, providing collaborative makerspaces, adopting technology solutions (such as research, discovery, digital repository, mobile solutions and social media) and being embedded librarians (Si, Xing, Zhou, and Liu, 2012) by integrating with non-library services such as courseware and other portals/applications. However, even if the librarians know what the user wants, and can imagine

the possibilities, they cannot move much ahead if they do not understand systemic and other barriers prevalent in the library. Service innovation requires knowledge of barriers that need to be overcome before innovation can happen. Based on our framework, we define KMSIL as gathering knowledge of user needs, innovation possibilities and barriers, analyzing and synthesizing these to overcome barriers, leading to service innovation in libraries.

CONCLUSIONS AND IMPLICATIONS

We set out to answer four research questions. The responses brought forth a rich set of findings, which are limited by the size of the sample. The primary contribution is a theoretical framework of KM for service innovation in libraries. The findings and the framework have important implications for more in-depth research and theory in KM. The framework can serve as a starting point to develop models for change management and service innovation, and could possibly be extended outside the library context. Being exploratory in nature, the study had a few important limitations: First, the sample size, while adequate for an exploratory qualitative study, is still quite low. While the findings are interesting and should be vetted against more data, the low sample limits the transferability of findings. Second, as the surveys were anonymous, there was no easy way to determine which of the responses resulted from the individual emails sent out, and which from the KM-specific mailing lists. There is the potential of a KM-specific response bias in the responses pertaining to KM. Third, the paper focuses more on service innovation as opposed to KM. Future work should supplement this with more questions on KM in the context of service innovation in libraries. A survey study with a larger sample would be a good follow-up to this study. Future work should distinguish between responses from people who are aware of KM from those who are not, and compare and contrast their views. Finally, the proposed framework should

be applied and tested in different library settings. While this study was exploratory, a bigger study will look at each part of the proposed theoretical framework and test it against a larger sample.

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