

# A taxonomy of the expected roles of librarians towards knowledge management

## An eight-layer perspective for practice

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### Abstract

**Purpose** – The purpose of this paper is to explore the connection between the various layers of roles and tasks of librarians with the various knowledge types and methods. Although there are multiple benefits anticipated with knowledge management (KM) schemes in libraries, the practical side of it among Library and Information Science (LIS) professionals is not yet notable or evident.

**Design/methodology/approach** – Taxonomy building and Delphi method were two means of research deployed to achieve the declared purpose.

**Findings** – It was possible to achieve several steps into structuring a taxonomy but yet further work has to be accomplished in order to consummate the taxonomy. For this, means of group interviewing method along with perhaps sponsorship of association relevant to librarianship might be an appropriate approach.

**Research limitations/implications** – Delphi process was not possible to be fully exercised and completed due to limitations of limited number of participants as well the overwhelming feeling of participants had toward the unfamiliar content. It would have been more rewarding to have physical meeting in groups to overcome such limitations.

**Originality/value** – This paper lays the foundation stone of a multi-layer taxonomy for roles of librarians toward KM. The taxonomy also unveils a dimension that librarians often miss when discussing KM. It also models the categories of knowledge types for LIS. Thus, the LIS community is urged to contribute in the development of this taxonomy which could become the handbook of reference in KM for librarianship.

**Keywords** Taxonomy, Library and Information Science, Librarianship, Knowledge management, Delphi method, Roles of librarians

**Paper type** Research paper

### Introduction

Whereas a good deal of literature (of Library and Information Science (LIS) discipline) emphasizes the relevance and multiple benefits of knowledge management (KM) to libraries, unfortunately explanations and guidance for how to implement KM, how it starts and how it gets incorporated in libraries are supported with much less momentum of research and evidence. Recent research (Roknuzzaman and Umemoto, 2009; Fergusson *et al.*, 2008) concurs that the practical side of implementing KM among LIS professionals is not yet notable. While it is true that many studies (e.g. Roknuzzaman and Umemoto, 2009; Sarrafzadeh *et al.*, 2009; Rooi and Snyman, 2006; Hamid and Nayan, 2005) show that there is a wide recognition among LIS practitioners of KM relevance to librarianship; however, “many LIS professionals simply don’t draw a hard and fast distinction between their role and that of the knowledge manager,” as Fergusson *et al.* (2008) concluded. They in fact go beyond and assert (regarding roles and practical side) that “there is no evidence in the literature that the situation has changed significantly,” and they believe that “indeed, several barriers to LIS involvement in KM are noted.” What may demystify this situation is that a number of serious observations persist, as explained next.

The first observation is that the span of perceptions among LIS professionals about KM relevance as well as roles is unfortunately wide (reported in depth in Rooi and Snyman, 2006;



Roknuzzaman and Umemoto, 2009; Nazim and Mukherjee, 2011, along with other findings in other studies). At one end, one finds who considers KM an evolution of librarianship field (e.g. Southon and Todd, 2001), while, at the other end, there exists yet unavoidable segment of librarians who disagree in different ways about benefits or relevance of KM to LIS discipline (e.g. Wilson, 2002). Many consider KM as what librarians have been doing for decades anyway and is rather a kind of upmarket label or rebranding of librarianship as found in perceptions reported in several studies (e.g. Malhan and Rao, 2005; Koenig, 1997). In some other instances, some librarians view KM being, more or less, a “document management system” topic that needs advancement and development, as reported in studies like Fergusson *et al.* (2008), or misinterpreted as content management as Roknuzzaman and Umemoto (2009) stated. So, the perceptions of LIS professionals vary widely. More important, “there is no universal agreement of how and to what extent KM is related to LIS” (Roknuzzaman and Umemoto, 2009; Onyancha and Ocholla, 2009); this represents a major obstacle to furthering the development of KM for libraries.

Second, there is a serious confusion among many LIS professionals (as well as in the business/management discipline, information systems disciplines and other disciplines) about the actual or practical difference between “knowledge” and “information,” and likewise conflation between “KM” and “information management” as reported in Fergusson *et al.* (2008), Koina (2003), Wilson (2002, 2005), and some other investigations. A possible contributing reason behind this confusion might be partly due to unavailable universal definition for what “knowledge” is (Kane *et al.*, 2006) as compared to “information.” One may aver that there are attempts to distinguish between these two as in, for instance, Southon and Todd (2001), Morris (2001) and Schwarzwald (1999); however, still these attempts did not realize their purposes. Another possible comment would argue that barriers to progress of KM implementation are referred to the major challenges of declining budgets, problems in information technology infrastructure, lack of incentives and training, etc. (Koenig, 1997). Despite that these challenges are important and relevant to hindering progress of application; the observations discussed earlier above are conception related and more difficult to repair. In other words, even if the mentioned challenges get resolved, the KM application side will not likely improve.

While the above observations do not undermine the worthy case studies published in literature presenting examples of KM implementation in libraries (although some cases are in fact examples of undeliberate implementation fully or partially of KM practices as, for instance, in Mavodza and Ngulube, 2011; Kumar Agarwal and Islam, 2014); nevertheless, the above observations, if not resolved, may continue as hinders or obstacles to the progress of KM implementation in libraries and in the total KM–LIS literature. Yet, there is no way for refraining development in this area (KM for libraries); there are several anticipated rewards in many facets in entertaining KM work. Moreover, at the time libraries are confronted by several trends such as the advent of internet, limited budgets, etc. (Yacoob *et al.*, 2010), KM might be a cure or a possible successful measure in meeting the ever-changing demands.

#### *Purpose of the paper*

A possible exit from the above complexities could be via paying more attention to the literature-identified “opportunities” and (their related) “tasks” (a work done by Rooi and Snyman, 2006), which represents the practical side, by carrying out modeling and linking pursuit to what librarians should handle toward KM. Librarians’ roles toward KM as a subject are yet unfurnished, and thus represent a niche for urgent research. One step into that is to involve the community of librarians (of various settings: academic/school libraries, public libraries, corporate libraries, special libraries, etc.) in developing those “opportunities” and “tasks” by: evaluating the feasibility of such “opportunities” as well as the “tasks” under

these opportunity; and suggesting further “opportunities” and “tasks.” However, before this takes place, one priority step is to link the “opportunities” to the framework of the job of the librarian, and more specifically, with the various “layers” of this job framework.

Herewith, the aim of this paper is to contribute in this linking pursuit. It is out of scope of this paper to look at the required set of skills and competencies for practicing KM, or to merely examine the awareness and perceptions of librarians about KM.

### **The research method**

Toward achieving the above purpose, this paper adopts a triangulation of Delphi experiment and taxonomy building by means of tree categorical analysis, and systematic concept analysis, development and modeling. It is not possible to utilize a questionnaire or a survey as KM is not established yet within the LIS discipline (as evident in the Introduction section above); a theoretical underpinning for a questionnaire will be difficult to find. An alternative choice like case study method is still not relevant to achieving the purpose of this paper as this research is not aiming at testing or looking into implementation matters. With the current status of literature (KM in LIS), there is a need for categorization and matching analyses; therefore taxonomy building, concept analysis (Fitzpatrick and McCarthy, 2016) and Delphi method can be feasible means to contribute to furthering the understanding of KM in library activities.

### **Taxonomy building**

This research commenced by modeling the elements of a possible taxonomy using a number of analyses as explained in the following steps. First, the possible “roles” (of librarian’s job) toward KM were identified. Next was keying out the possible “classes” of knowledge disseminated within any organization that accommodates a library. Then, the “knowledge classes” were mapped and thus matched to the “roles.” The major endeavor is to associate the “roles” (and their “knowledge classes”) with the “opportunities” (and their “tasks”); thus ultimately, the total analysis generated a taxonomy. The terms opportunity, task, role, knowledge class and taxonomy are explained in the subsequent sections.

#### *The possible roles of librarians*

One way to depict the framework of the librarian’s job is classifying it into “roles” (toward KM), which can be modeled by systematic thinking (as no literature discusses this topic yet) into, at least, two roles (as below):

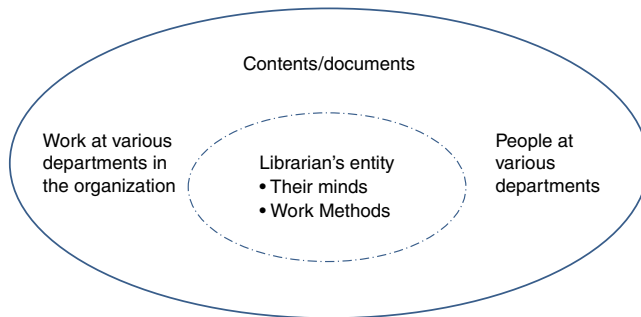
- (1) “As-a-librarian role”: where librarians (being librarians) are to use KM concepts and tools:
  - “within” their usual librarianship functions (e.g. cataloguing, classifying, indexing, abstracting, referencing, etc.); and
  - “beyond” their usual librarianship functions (i.e. the functions of various departments in the organization where the library is hosted).
- (2) “As-an-employee role”: where librarians (being employees as any other employee inside the organization) are to use KM concepts and tools toward their library work itself and toward themselves (i.e. librarians have to think about it being an employee and not specifically a librarian):
  - related to the doing of the library work (work practices and methods of librarianship); and
  - related to the development and improvement of library practices and methods.

Categorizing in this manner is necessary because it brings to the attention of librarians another dimension (in the scene) and that is “being-employee” perspective, as any other employee in the organization. Librarians usually “care about others” and handle content/documents for the “support of others” and this is why the common language in the librarianship literature associates KM with only the handling of the documents and the processing of information to support decision making in various departments. Thus, they often miss “being-employee” dimension, in which they should as well pay attention to what is related to the librarian’s entity: the work methods, and their minds (Figure 1).

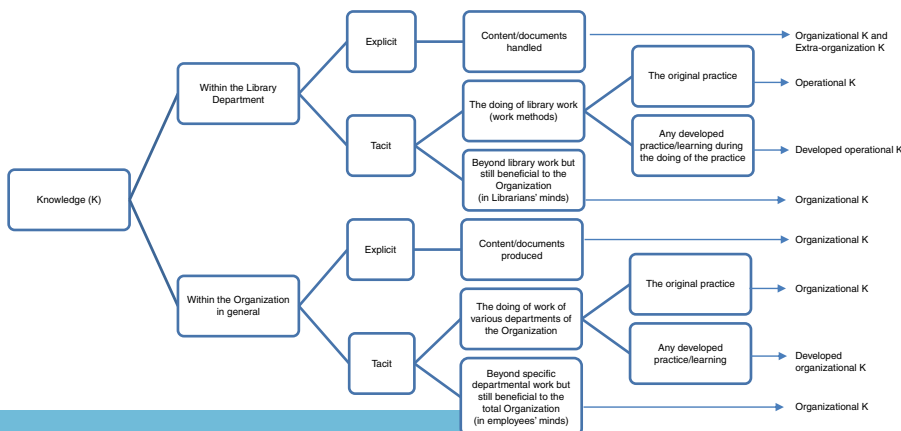
*The possible classes of knowledge*

With means of tree categorical analysis of knowledge that may exist in any organization hosting a library, Figure 2 shows possible “classes of knowledge” which librarians have to deal with. This analysis derives five classes of knowledge – though within eight themes – with the following definitions (some of them are already utilized in the general literature of KM field but without a specific, intended classification or connection to library work):

- (1) “Operational knowledge”: knowledge related to the doing and accomplishment of the library function/department.
- (2) “Developed operational knowledge”: new knowledge synthesized (e.g. lessons learnt, rules of thumb, valuable conclusions out of several observations, etc.) related to/or



**Figure 1.**  
The librarian's entity and the surrounding environment



**Figure 2.**  
Tree analysis of the possible knowledge classes

during the doing and accomplishment of functions of library (this term is proposed only in this paper, and not in literature).

- (3) "Organizational knowledge": knowledge related to the doing and accomplishment of functions of various departments of the organization, part of which a library is operating. This includes not only knowledge by relevant specialist (e.g. accounting practice knowledge by an accountant) but as well from a person from another department (for instance, a maintenance specialist well rounded in financial analysis techniques).
- (4) "Developed organizational knowledge": new knowledge synthesized during the doing of organizational work (this term is proposed only in this paper, and not in literature).
- (5) "Extra-organizational knowledge": knowledge tackled anywhere in the world outside the organization, presented in books, journals, documents, etc. (decreasing physically, increasing in digital form).

#### *Linking roles with knowledge classes*

Thereafter, based on Figures 1 and 2 and related sections above, the roles are adjoined to the classes of knowledge as exhibited in Table I.

#### *The literature-identified opportunities and tasks*

Whereas there are several research works that suggest and discuss the various opportunities and tasks that should be handled by librarians toward KM, the latest work that solicits and categorizes such opportunities and tasks is performed by Rooi and Snyman (2006). Therefore, this paper considers only those examined and classified by Rooi and Snyman (presented in Table II), and leaves any future-identified ones for forthcoming studies.

#### *The literature-identified KM tools and methods*

Table III solicits the commonly known tools and methods associated with handling KM work from the general literature of KM as well as from the LIS–KM literature (mainly: Duffy, 2001; Liao, 2005; Edwards *et al.*, 2005; Miller, 2005; Meroño-Cerdan *et al.*, 2007; Nazim and Mukherjee, 2008; Kumar Agarwal and Islam, 2014).

Role	Source of knowledge	Knowledge classes
"As-a-librarian role"	Library contents	Organizational knowledge Extra-organizational knowledge
	Contents in departments	Organizational knowledge
	Organizational work practices	Organizational knowledge
	Developed organizational work practices/learning	Developed organizational knowledge
	In employees' minds but beneficial to total organization	Organizational knowledge
"As-an-employee role"	Library work practices	Operational knowledge
	Developed library work practices/learning	Developed operational knowledge
	In librarians' minds but beneficial to organization	Organizational knowledge

**Table I.**  
Adjoining "roles" to  
"knowledge classes"

Opportunities	Their related tasks
Facilitating an environment conducive to knowledge sharing	<ol style="list-style-type: none"> <li>1. Create awareness about the benefits of knowledge sharing</li> <li>2. Encourage teamwork</li> <li>3. Establish platforms which are conducive to informal discussions and interactions (e.g. development of Communities of Practice)</li> <li>4. Build and maintain Expert and Best Practice databases</li> <li>5. Become active in the design and development of the organizational intranet and portals</li> <li>6. Take the lead in developing a knowledge sharing culture in the organization</li> </ol>
Managing corporate memory	<ol style="list-style-type: none"> <li>1. Conducting an information and knowledge audit which includes:               <ol style="list-style-type: none"> <li>a. Identification of information and knowledge needs</li> <li>b. Mapping info flows</li> <li>c. Analysis of gaps, duplications inefficiencies and over-provision</li> </ol> </li> <li>2. Development of information and knowledge databases (expert databases or knowledge repositories)</li> <li>3. Utilization of a combination of technologies such as the intranet and groupware for speedy information access and dissemination</li> </ol>
Transfer of information management and related skills to a new context linked to business processes and core operations	<ol style="list-style-type: none"> <li>1. Process and provide information to managers to make informed and intelligent decisions</li> <li>2. Develop new services/products to improve information services and achieve organizational objectives</li> <li>3. Ensure more time is spent turning information into knowledge and less on seeking information</li> </ol>
Development of corporate information literacy	<ol style="list-style-type: none"> <li>1. Access and gather data in order to organize and communicate information</li> <li>2. Navigate and integrate information sources, including electronic resources</li> <li>3. Assess and evaluate information found or knowledge shared</li> <li>4. Create, record, store and archive information</li> <li>5. Identify the potential value that relevant information can add to business processes</li> <li>6. Properly use information technology facilities</li> <li>7. Filter and discard irrelevant information</li> <li>8. Make decisions based on validated information</li> <li>9. Define an organization's information needs and provide suggestions on how to satisfy these needs</li> </ol>
Management of information in a digital/electronic environment	<ol style="list-style-type: none"> <li>1. Set standards for the overall information architecture</li> <li>2. Selecting and packaging information in a way that maximizes its usefulness (e.g. add index terms or cross-references)</li> <li>3. Inform users about free, full text online journals</li> <li>4. Provide training on how to conduct online research (best practices in internet searching)</li> <li>5. Construct thesauri to classify and structure information</li> <li>6. Train staff to efficiently and cost-effectively use online databases</li> <li>7. Publish knowledge through the various available channels</li> </ol>

**Table II.**  
Opportunities and tasks solicited (from Rooi and Snyman, 2006) and tabulated

### *Chaining all together*

Ultimately, Table IV chains roles to knowledge classes to opportunities to tasks in a taxonomy of eight layers. It also chains to the KM tools and methods. In this manner, this taxonomy (Table IV) brings the total scene altogether. The value of this taxonomy is twofold. First, the taxonomy provides a platform or a guide for comprehensively identifying all possible relevant opportunities (and their tasks). Second, it helps to key out what and where librarians should dedicate efforts. In other words, it awards a chance for locating discrepancies or areas with shortage of care and attention to KM.

**Table III.**  
List of the currently known (in general literature) tools and methods for support of knowledge management

	Tools and methods for supporting KM	
Employees with common interests getting together in groups voluntarily regularly for discussions and sharing of experiences	A list of questions/answers relevant to the work	An intelligent agent software
Team(s), with complementary skills/knowledge, assigned by the management of the organization	A list of questions/answers related to customers' needs (for access of customers)	Some type of groupware (like desktop video-conferencing, forums, intranet, etc.) to facilitate group meetings, teamwork, virtual meetings, etc.
Training and workshop sessions annually	Data mining capacity	Electronic bulletin board for declaring updates, new instructions, announcements, warnings and any urgent matters
Fixed times for coffee breaks for possible informal discussions/conversations	Document management systems for work purpose (including manuals and best practice documents, etc.)	Product memory system that combines all product information and changes
Internal seminars/presentations (formal or informal) during the year	An archived library (with both online and paper-based resources)	Folksonomy, tagging and bookmarking
Online expert directory/network	Establishing positions in the organizational structure: "chief knowledge officer," "knowledge analyst, or "knowledge worker"	RSS
An expert system for the support of the work	Physical "social space" or physical "talk rooms" available for possible unplanned meetings	Blog, twitter, wikis and podcasts
A learnt-lessons system – where employees find archive of previous projects, cases, rules, etc.	Mentorship for formal on-the-job training or informal advising purpose	Knowledge map of knowledge locations (human, non-human) inside the organization
Shared electronic databases	Discussion forums	Documented procedures for doing the various work activities

There are two assumptions associated with this taxonomy:

- (1) KM is neither the usual librarianship functions, nor part of them; KM and LIS are two individual disciplines with a certain commonality.
- (2) KM is not information management, and likewise, "knowledge" is not "information" (this assumption is necessary because there are some beliefs that there is no real difference between these terms). One adopted definition is by Nonaka and Takeuchi (1995).

### Matching all into the taxonomy

The last remaining requirement is to insert all the identified opportunities and tasks (Table II), and all the tools and methods (Table III) into the relevant blocks of the taxonomy in Table IV. For this to take place, this paper attempted to contact as many KM-literate librarians as possible (several countries) to form a kind of group interviewing or focus groups or Delphi method but unfortunately the efforts failed to win so, although a large number of both individuals and organizations were approached. This research believes that it has to be a good number of focus groups and/or group interviews to take place in order to validate the matching and gives strength to the total taxonomy, which was not feasible in

Layer no.	Role and its related knowledge classes	Literature-suggested opportunities	Tasks (under these opportunities identified in literature)	Tools (to handle the tasks for KM)	Expected roles of librarians towards KM
1	As-an-employee role Operational knowledge				41
2	As-an-employee role Developed operational knowledge				
3	As-an-employee role Organizational knowledge – in librarians' minds				
4	As-a-librarian role Organizational knowledge – contents				
5	As-a-librarian role Organizational knowledge – practices				
6	As-a-librarian role Organizational knowledge – in employees' minds				
7	As-a-librarian role Developed organizational knowledge				
8	As-a-librarian role Extra-organizational knowledge				

**Table IV.**  
A taxonomy chaining roles (and related knowledge classes) with opportunities (and their related tasks)

the case of this research due to limitation of reach. Yet, this paper still shares the single failed experiment carried out as a little step toward developing this taxonomy, which is meant to be a future reference and guide for librarians on KM.

#### *A failing Delphi attempt*

In search for participants for Delphi (which usually requires between six and ten participants), this research carried out contacts by e-mail with several LIS societies and councils based in North America, Scandinavia, Europe, Japan, Malaysia, Brasil, New Zealand and the Philippines, in addition to IFLA. However, no positive response of librarians to participate was received. The process took near six months. Then, an in-depth search in cyberspace for identifying a list of specific individual librarians (with background of KM or at least acquainted with it) was carried out. It was possible to find 16 librarians from Sweden (1), Germany (1), South Africa (3), Portugal (1), the Philippines (3), Finland (2), the USA (1), Singapore (1), Malaysia (2) and Poland (1). They were invited to join Delphi and unfortunately only three positive answers were received; therefore, a kind of mini-Delphi was carried out: South Africa (1), Portugal (1) and the third was from the Philippines.

A guide was used for performing this experiment (see Figure 3). The attempt, though, did not render the wished results; rather, the behaviors of response were dominantly into either the feeling overwhelmed with contents of Tables II and III, or the feeling unsure how the matching should take place in the taxonomy. (Note: some paragraphs were instead replaced under Concluding discussion section below).

#### **Concluding discussion**

As this paper aimed at laying the foundation stone of a multi-layer taxonomy for roles of librarians toward KM, the LIS community is urged to contribute in the development of this taxonomy which could become the handbook of reference in KM for librarianship. Another contribution of this paper is that the taxonomy unveils a dimension that librarians often miss when discussing KM. Equally important, the taxonomy is based on five classes of knowledge to deal with and not only one class or category. This research emphasized, in connection to this taxonomy, that knowledge is not information. Moreover, a classification tree of knowledge types in librarianship (Figure 2 and Table I) conduces to the understanding of KM



**Figure 3.**  
The used guide for  
the mini-Delphi  
experiment run in  
this research

### Delphi Guide

**Round 1**

The participants are to be sent the below material (three tables and one figure) and asked to respond to the below set of questions:

1. Do you agree on the layers classified in Table 1 (which is connected to Figure 1), or do you believe that we must add/eliminate a layer, next
2. Do you agree on the feasibility and comprehensiveness of the presented "opportunities" and "tasks" (Table 2) thus eliminate or add perhaps suggest new ones, next
3. Try to match the layers from table 1 with the opportunities and tasks from Table 2
4. Try to match the tools and methods (Table 3) to the tasks and roles; you may suggest eliminating or adding a new tool
5. Advise kindly whether KM can be an exit or a resolution for the current challenges and trends facing librarianship (generally speaking)

*Appendix*

1. Knowledge classes tree diagram (Figure 2)
2. Opportunities and Tasks table (Table 2)
3. KM Tools and Methods table (Table 3)
4. Taxonomy layers' scheme (along with the two assumptions associated with it) (Table 4)

**Round 2**

Upon receipt of the feedbacks of the participants, develop a possible consensus and send it back to the participants for either concurrence or otherwise critical comments

in LIS. It was unfortunate for the Delphi attempt to render no outcomes as was planned, but at least there were some learning cultivated out of this attempt, as below.

For such a data collection work to succeed (via either group interviewing, or expert panel, or Delphi), it is recommended that physical meetings are more preferable over remote communication, due to more possibility for more effective explanation. Also, it looks that group interviewing may realize better results than Delphi due to more chance of teamwork and collective thinking and analysis, instead of individual act and reflection which is limited to individuals' credentials only.

Another suggestion is that it may likely render better chances for success if the carry out of these discussions is nurtured by a large organization or associations relevant to LIS discipline. As may be noticed, it was a limiting factor for this paper that there was no LIS-related association to support the reach to librarians who have hands on experience on KM, providing the fact that this segment of librarians is already too few (globally speaking). This failing experiment, in fact, advises that any future participants must have hands on experience on KM and not mere interest in the subject.

#### *Future development*

To contribute in advancing the taxonomy of this paper, the future piece of research has to first update the outcomes of Rooi and Snyman (2006). Afterwards, group interviewing studies, as many in number, with coverage of various library types (special libraries, academic libraries, public libraries, etc.) may work toward filling the blocks of the taxonomy (Table IV). The Delphi guide (Figure 3), which was used in the reported mini-Delphi, could be one possible guide for the group interviewing of such future studies. Also, future research may thereafter look into the necessary skills in response to the roles in the taxonomy once shaped and decided.

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#### Further reading

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