Knowledge Sharing Capabilities in Today's University Libraries

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Abstract:

This paper provides interim results, in the form of (i) an improved conceptual collaborative process model for identifying knowledge-sharing requirements of librarians while collaboratively performing Reference and Information Services (RIS), (ii) results of a questionnaire sent to RUSA[1] members for validating the above model, and (iii) an evaluation of the existing state of practice in knowledge sharing in university libraries, also conducted in the light of the proposed model. Analysis of the results confirms validity of the underlying conceptual and relationship aspects among various concepts. Results also reveal that majority of libraries investigated are quite friendly towards knowledge sharing, and majority of librarians value importance of knowledge sharing.. Results also confirm that the knowledge that they mostly use is mainly intangible knowledge.

Background

In today's knowledge economies knowledge is the driving force for social development. The attention of the society to information and knowledge is rising and people's demands for information and knowledge are increasing. Along with the

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[1] Reference and User Services Association
http://www.ala.org/RUSAMAINTemplate.cfm?Section=rusa

growing interest in knowledge management the literature on different aspects of KM is extensive. Many researchers from different subject domains have stressed the significance of research findings in improving the state of KM and its impact on sustained organizational success in the new era (Devlin 1999, Stewart, 1997). This has provided a good environment for library development (Wang, 1999). The authors of this paper argue that this situation is responsible for a dramatic shift in the role of university libraries in managing knowledge from a traditional, strictly informational role to an integrative role. This in turn would require much of the librarians' tasks to be performed collaboratively. We envisage that the knowledge sharing capabilities of academic libraries will eventually become one of their major critical success factors.

A number of models has been developed and introduced to conceptualize and illustrate the processes of knowledge transferring and sharing within the organization. Nonaka (1991) developed the SECI model, which describes how knowledge is shared through the processes of socialization, externalization, combination and internalization. Handzic (2003) has proposed a conceptual model, which illustrates culture and technology as the two most important factors influencing knowledge sharing process. This is in line with many similar studies that indicate socio-technological factors influence the process of knowledge sharing considerably (Warkentin et al. 1997, Davenport et al. 1998, Bender and Fish 2000, MacDermott and O'Dell 2001, Ford and Chan 2003).

The requirements and procedures for knowledge sharing within organisations have also received much attention in the literature. Nonaka and Knonno (1998) believe that the type of organization has an important role in promoting knowledge sharing. Handzic (2003) proposes that organisational culture and technology are considered critical success factors in this process. Gurteen (1999) states that knowledge sharing culture must start at the individual level because "every employee has a sphere along with their own individual knowledge (p.1).

This paper presents interim results of a study that is part of a major ongoing research project between researchers in different universities with various organisational cultures. The main research question in this study is to identify knowledge sharing requirements of librarians in university libraries. This paper investigates the first part of this research question, and the part related to the various organisational cultures will be subject of another study. Identification of the elements which encourage or discourage knowledge sharing, as well as the effect of organisational culture on knowledge sharing is the subject of our future studies.

Knowledge Sharing in University Libraries

Libraries, like other organizations, can benefit from KM initiatives. Some researchers from the library profession have attempted to identify the requirements by which libraries can promote knowledge sharing among librarians, their customers and suppliers in their every day activities. However, this is an emerging interest that is relatively new in this field, and therefore approaches that deal with these issues are mainly general in nature. Among the first librarians who introduced the concept 'knowledge management' to the LIS profession are Xiaoping (1999) and Rui (1999). Shanhong (2000) also describes how libraries can manage the creation and sharing of knowledge among their staff. She proposes that libraries should create and develop their own "document information resources". She also emphasises that, in sharing of

knowledge, libraries should make comprehensive utilisation of expert systems and all media.

White (2004) reports finding of a case study she carried out at Oxford University Library Services (OULS) and found how academic libraries can benefit from KM in integrating librarians' knowledge into the whole process of library services. She concludes that an effective knowledge sharing culture exists at OULS and that librarians consider their organisation as a learning organisation. Similarly, Sinnote (2004) explores KM in terms of its relevance for library and information science professionals. In a general approach, Sinnote describes the key points where LIS professionals can be involved in KM initiatives. Parirokh and Fattahi (2005) report how sharing of knowledge among librarians can improve organisational learning in academic libraries.

Based on the above recent emphasis on importance of knowledge sharing in today's university libraries, this paper presents a modified version of a conceptual knowledge-sharing model called Library Reference Knowledge-sharing Model (LRKM) that was originally designed for generic collaborative business processes (Daneshgar 2004), and is modified in this paper for library-specific collaborative processes. The major goal of the LRKM is to identify knowledge-sharing requirements of librarians when working collaboratively within the RIS process in university libraries, and is presented in the next section.

A Knowledge-Sharing Model for University Library Processes

The collaboration context in this study is the RIS process in academic libraries. This context is defined by a set of collaborating *roles, tasks* that these roles perform within the process, and the *knowledge artefacts* that these roles utilise/share for performing these tasks collaboratively.

In defining knowledge sharing requirements an interactionist view is adopted for this research and is gaining popularity among IS researchers as a suitable perspective that explains collaboration phenomena correctly. According to this approach, objects in a given medium manipulate each others' understanding and awareness via *focus* and *nimbus*, which are subspaces within which an object chooses to direct either its presence, *nimbus*, or its attention, *'focus'* (Benford & Fahlen 1993). The more an object is within one's focus, the more aware one is of that object; and the more an object is within one's nimbus, the more aware it is of the person. The proposed model is called LRKM model that represents various collaborative processes in today's library with specific goal of identifying knowledge sharing requirements of the roles within the process. The LRKM is defined at conceptual level as a linked set of collaborative semantic concepts; however, when presented to library domain experts, it is supposed to help them to devise appropriate strategies for removing knowledge sharing barriers all at conceptual levels. These knowledge-sharing requirements, when compared to the actual knowledge-sharing capabilities of the roles/actors, will lead to identification of knowledge gaps. Removing such (undesirable) knowledge gap in turn can be considered as one major organisational learning priority.

Figure 1 shows a LRKM for the RIS process; steps for constructing this model is described in the next section. Here we simply describe characteristics of this model.

<FIGURE 1 COMES HERE>

The LRKM model is a *connected graph* that shows a knowledge map of the context of collaboration in university libraries using collaborative semantic concepts *roles*, *knowledge artefact*, and *tasks* as its building blocks. Filled ovals represent process *roles*, and plain ovals represent *tasks.* A line connecting a role to a task is a *role artefact*, and a line connecting two tasks is a *task artefact*. A role artefact is a kind of knowledge artefact that a role utilises in order to execute its relevant task. It corresponds to that component of the knowledge artefact that the role utilises privately for execution of the task. A task artefact on the other hand is the other component of the knowledge artefact that a pair of roles utilises (e.g., share, update, jointly create, etc.) in order to collaborate in a pair of related tasks.

Following is a list of components that make up the LRKM model of Figure 1. Lines are shown by their endpoints:

R1= Reference Service librarian

> R1-T1.1 (role artefact) = Personal Knowledge, organizational procedures (e.g., training, committees, collections, Internet, databases), and personal advice (from colleagues, academics, experts, etc.).
> R1-T1.2 (role artefact) = Personal Knowledge, Organizational procedures (e.g., Internet, databases, library profiles, people and companies' profiles, etc.), and personal advice (from colleagues, experts, etc.).

R2 = Library Users (students, academics, and other librarians)

> R2-T2.1 (role artefact) = Organisational procedures (e.g., library newsletters, notices, signs), and personal advice (from lectuerers/colleagues' friends, reference librarians, etc.)

R3: Other libraries

> R3-T3.1 (role artefact) = Organisational procedures/databases (databases, consortia contracts, conferences) and personal advice (from colleagues/lecturers/experts, etc.).

Task Artefacts:

> T1.1 - T2.1 = face-to-face communication, email, website, reference desk, live-chat, telephone/fax.
> T1.2 - T3.1 = Organisational/ICT infrastructures (e.g., snail mail, email, fax, telephone), user referrals.

Validation of LRKM Model

The semantic and pragmatic aspects of the LRKM conceptual model were assessed before it was used by the authors to design their survey for this study. Such validation

will ensure readers of correctness of, as well as the pragmatic nature of, the LRKM model constructs used in LRKM for representation of the RIS collaborative process; and that the odel can be replicated in other situations with minimal need for adjustments. And more importantly, this validation assessment will increase both validity as well as credibility of the results obtained from the survey that was designed according to the semantics of the LRKM conceptual model. These issues are discussed in the following subsections.

***Semantic* and *Pragmatic* Validation of LRKM**: According to Moody et al. (2003) one of the most crucial tasks in the process of information systems development is selection of appropriately validated analytical tools. Naylor et al (1996) suggest the following two methodological positions concerning the problem of IS model validation:

(i) Synthetic a priorism. This position states that validation consists of listing all the unquestionable truths and ensuring that the model and its attendant logic are compatible with them.

(ii) Ultra empiricism. This position asserts that no model is considered to be valid unless its assumptions can be verified by independent scientific experiments.

The above classification has been criticized for their preoccupation with the validity of the assumptions of the model. On the other hand, there are also a number of frameworks proposed specifically for validation of the *quality* of the conceptual IS models (Kesh, 1995; Krogstie et al., 1995; Lindland et al., 1994). [as you know "et al." is basically Frence and abbreviation. After al there MUST be a POINT "et al." These frameworks define key concepts underlying conceptual model quality, and are more comprehensive approaches to quality evaluation.

In relation to these existing frameworks Moody et al. (2003) believe that the most serious deficiency in the existing literature of (conceptual) model validation framework is a lack of empirical justification; that is, most frameworks are either justified based on theory or the author(s)'s experience.

This study has adopted the Conceptual Model Quality Framework (CMQF) by Lindland et al. (1994) as it allows people other than the developers of these models to assess quality aspects of the model. In this study, while the 2nd author is the developer of the model, the 1st and 3rd authors were domain experts (that is, library experts in this study) that validate quality aspects of the model, and eventually decided to base their investigation on this theoretical framework.

The CMQF has been developed for evaluating conceptual models of any type such as data models, process models, and interaction models, and in this paper, for collaborative processes. The CMQF framework has three distinct quality objectives to achieve. These are:
1. *Language-domain appropriateness.* This measures how the language fits the domain, the degree to which the language makes the kind of model statements that are appropriate in the domain.
2. *Language-audience appropriateness.* This relates to extent by which the audience agrees that the language is understandable and appropriate.
3. *Audience-domain appropriateness.* This relates to the extent to which the audience is already familiar with, or is able to be familiar with, the problem domain.

The above quality goals correspond to the three categories namely, *Syntactic, Semantic,* and *Pragmatic* quality measures which are based on semiotic theory (Kesh, 1995; Krogstie et al, 1995; Lindland et al, 1994).

Model Validation Methodology: In order to achieve the above goal, several meetings were initially arranged between the developer of the model (2nd author), and the library domain experts (1st and 3rd authors). An initial draft of the LRKM model was prepared by the model developer and was presented to the domain experts over four in-depth interviews, two separate interviews with each of the domain experts. For conducting these interviews an interpretivist case study methodology was adopted using a combination of theory building and sense-making mini-case study strategies. The objective of these interviews was to find appropriately modified phrases and model constructs that can best represent various aspects of the RIS process in university libraries in general. These aspects include correct identification of individual tasks, role artefacts, task artefacts, and roles. It also included in-depth investigation on accuracy of descriptions for each of these semantic concepts, as well as meaningfulness and rationality of the relationships that exist among these concepts. And finally, domain experts' opinions were sought regarding the iconic choices made by the model developer for drawing the LRKM model in Figure 1.

Overall, the CMQF validation methodology highlighted required modifications to the concept descriptions of the initial version of the model in order to achieve the highest level of semantic, syntactic, and pragmatic model quality. More specifically, it resulted in much improvement in individual task descriptions, identification of missing relevant roles, and finally improvements in description and categorisation of the role/task artefacts. A modified LRKM model was then constructed accordingly and is shown in Figure 1. It is intended that in future studies eventually these findings be used for development of the knowledge-base component of a collaborative knowledge management system that supports librarians in their day to day activities within the RIS process.

Research Methodology

As mentioned before, this research aims to empirically validate the LRKM constructed for generic AIS processes in university libraries. It adopts an interpretivist approach with an inductive research strategy aimed at producing an understanding of the collaborative context of the AIS as a precursor for identifying knowledge-sharing requirements of the librarians involved in the process. Reliability is assured by consistently and appropriately recording observations from focus group, document studies, and survey questionnaires.

The overall research methodology in this study consists of four stages. In the first stage the theoretical foundation of the KSM is utilised to construct a conceptual model of the AIS process. A focus group consisting of two library scientist and one information systems expert collaboratively performed tasks at this stage. For the two library domain experts to provide input to this Information System oriented exercise, for designing first draft of the LRKM, domain experts used their experience, documents such as literature on reference and information services including RUSA Guidelines for Information Services (2000). Results are shown in Figure 1.

Using the results obtained from the above stage, the focus group technique was employed to design domain-appropriate survey questions. This followed by a pilot test to gain confidence on the applicability of these questions. In the third stage, empirical data were collected. In the last stage, data were analysed and interpreted. The remaining three steps are discussed in the next section.

And finally, findings were used to derive conclusions regarding the knowledge sharing requirements of the librarians within the RIS, as well as identifying future directions of this study. These will constitute the last two section of this paper.

Empirical Results

Demographic information: Most of the respondents to the questionnaires (60%) were female. About 60% of them are more than 40 years old. About the same percent of them have been working more than 4 years in their library environment. This shows that most of the respondents should have good knowledge of their library, its policies, culture, and users/clients. This, to some degree, will increase credibility of their responses. Almost all participants (94% or 28 out of 30) have MLS degree. About half of them (47%) have more than one master's degree. About 40 percent can be categorised as the subject librarians. That is, their educational background has some relation to the field of study of students for whom they provide services. The educational background of 27% of them has some relationship to those students and educational groups with whom they mostly interact.

Results also show that 91% of reference librarians who participated in this research are involved in more than 5 tasks. This increases the validity of the variables considered for this research. Variety of titles assigned to these librarians reveals the variation in their duties and also the fact that one single title has not been acknowledged for this position within the university libraries. These titles are:

1. Reader services librarian,
2. User education librarian
3. Document delivery
4. Director of reference services
5. Public services librarian

5. Reference librarian
6. Coordinator of user education
7. Access librarian
8. Head of reference services
9. Liaison librarian

Results show that for responding to library users (corresponding to the task T1.1 in Figure 1), librarians use a variety of information sources (these sources correspond to the *role artefacts* R1-T1.1 and R1-T1.2 in Figure 1). This is demonstrated in table (1) below:

Table (1): Sources of Acquiring Information for Responding to Users (n = 30)						
Personal experience	Consultation with colleagues	Library collection	Internet	Consultation with academics	Using other libraries' collections	Others
30 (%100)	27 (%90)	30 (%100)	28 (%93)	12 (%40)	16 (%53)	3 (%10)

It seems that almost all librarians use variety of different information sources for capturing required knowledge for performing their tasks. For acquiring knowledge, they value the Internet to the same extent that they consider library collection and consulting their colleagues. It seems that they believe in knowledge sharing as a source of information. Three librarians specified different information sources. These are community expertise, web logs and professional discussion groups. Librarians are involved in constant interactions with information sources and users; and this results in accumulation of a vast amount of knowledge and experience.

According to Nonaka and Knonno (1998), communication between actors, which results in conversion of tacit knowledge into tacit and/or explicit knowledge, is possible through sharing ideas and will result in self-development. It seems that librarians are actually quite interested in consulting their colleagues, but most of them do not consider academics as a source for knowledge acquisition. On the other hand, they rely on the Internet more than the information that resides in other libraries and can be acquired through communication with them. This might be due to an ineffective *role artefact* that connects R1 to T1.2 and R3 to T3.1 in Figure (1).

Based on the above findings, authors consider acquisition of a knowledge management system for facilitating the above interactions as a positive step towards enhancing efficiency of knowledge sharing activities among librarians, as well as for building collective and organizational mind.

Results from Table (2) below reveals that formal approaches for anticipating future information needs such as university publications, survey results, and other published academic information are not common practices for this purpose. On the other hand, informal approaches such as communication with users or academics are considered more common. The problem of such informal approaches however is that the nature of their knowledge contents is *tacit*, meaning that it cannot be codified easily so that it cannot be made available to, and be shared by, all other librarians.

Table (2): Preferred Methods of Anticipating Information Needs of Library Users (n = 30)						
University publications and products	Surveys results	Contact with users	Contact with university teachers	Formal Academic contents	Subject librarians	Others
17 %57	13 %43	30 %100	29 %97	4 %13	20 %67	2 %7

In Figure 1, the line between R2 and T2.1 represent the *role artefact* that holds relevant available library services within the library. This information forms the knowledge base of user about library services. Librarians must, normally inform users about their services and conversely, users can request about available and future services. This *role artefact* can be used by marketing and publicity of services within the library. Different approaches, which have been used for marketing library services to the users, are demonstrated in table (3).

	Library notice	Library signs	Library internal news-letter	University news-letter	Library presen-tation & demos	Library instruc-tional programs	Library alert system	Library mailing list of users	FAQ list	Staff data base	Reference librarian	Liaison librarian
Students	22	28	9	13	23	27	9	3	15	5	24	15
Teachers	24	26	12	15	27	24	9	6	14	4	24	20
Colleagues	19	22	13	12	16	12	7	5	11	3	22	15
Other libraries	5	2	5	3	10	2	3	3	8	4	9	4

The results in table (3) show that librarians mostly use conventional approaches in marketing their programs. Technology-related methods such as (electronic) mailing list, automatic alert system, FAQ database and accessing staff through computerised databases are among the least used methods for sharing knowledge between librarians and users about library services. It seems that all participating libraries have not effectively used technology for this activity.

Various *task artifacts* that are currently used by the librarians are shown in Table (4). These *task artefacts* (also called 'knowledge artefacts') correspond to the communication channels, repositories, and business procedures that enable a pair of role collaborate in performing their collaborative tasks. In Figure 1, lines that connect T1.1 to T2.1, and T1.2 to T3.1 show these artefacts. Table (4) shows the extent to which participating libraries have used these artefacts.

Table (4) Communication Channels With Users (n = 30)									
Intranet	Email	Library website	Virtual reference desk	Mailing lists	Face to face communication	Telephone	Fax	Snail mail	Others
20 %67	30 %100	26 %87	15 %50	16 %53	28 %93	25 %83	8 %27	16 %53	2 %7

Almost all libraries use email and library Website as part of their communication system. The Intranet and telephone lines have also been used by most libraries. However, the traditional face-to-face communication method still is being used widely. Virtual reference desk and user mailing lists, which are relatively new artifacts, have been used by about half of the participating libraries, probably waiting for a wider acceptance in future. This claim is based on the current trend that a large number of library users are invisible users who only remotely communicate with libraries. As a result, these two latter artifacts seem to be suitable channels for a considerable number of users in future.

Sharing of knowledge requires both organisational support as well as personal interest. The first group of factors reflects required organizational procedures, culture and technological infrastructures for effective support of knowledge sharing. For example, librarians need access to both tacit and explicit knowledge residing in other people's minds in the form of organised knowledge bases and experiences of other librarians and experts. According to Nonaka and Knonno (1998), explicit knowledge is the part of knowledge that can be codified and documented and most possibly, result in structured knowledge within computer systems. The tacit knowledge on the other hand can be shared through meetings, conferences and other gatherings (both through physical and/or electronic channels). The extent to which libraries provide

appropriate set of organisational procedures for knowledge sharing was examined in this research and results are shown in Table (5):

Table (5): Organisational Procedures and Relevant Infrastructural Technologies For Supporting Knowledge Sharing in Academic Libraries (n = 30)	
Good work practice	3
Lessons learnt	1
Databases of experts	5
Database of staff publications	4
Database of information in specific subjects	12
Training manuals	17
Databases of staff profile	2
Databases of users' profile,	1
Experts' publications	2
Data analysis reports	3
Reports of observations and experiences	6
Lecturers' profile	3
Statistics about use and users	18
Reports of library surveys	14

The scattered data in this table that needs further investigations may suggest a lack of comprehensive organisationa policies and procedures dealing directly with the knowledge sharing and may cause a mismatch between available technologies and lack of their use among librarians. According to the results only 9 libraries mentioned that they have documented policies for cooperation, collaboration and communication within the library, and/or with remote libraries. Three libraries mentioned that the library manager or the executive manager is already responsible for knowledge management in their library. That means that knowledge management and knowledge sharing initiatives have not been institutionalised in majority of today's academic libraries participated in this research.

As briefly mentioned before, the second factor that contributes to effective knowledge sharing is related to the personal interests and degree of enthusiasm of librarians for sharing their knowledge with others. According to Jashapara (2004, p. 189) such personal traits, that is, 'personal attitudes' and 'personal beliefs' towards knowledge sharing, constitute two of the four pillars of organisational cultures (with the other two being 'organisational values' and organisational assumptions'). However, as mentioned before, this paper reports interim results, and does not take into consideration the effects of organisational culture on knowledge sharing. For this reason more elaborate investigations on organisational culture will be conducted in our future research.

And finally, in their own words, librarians specified the following activities and strategies in their libraries as factors, which can encourage knowledge sharing among librarians.

Sharing research projects
Training programs
Online newsletters
Teaching methods
Knowledge sharing policies and strategies
Leadership and dedication of time
Group discussions
More communication channels
Formal procedures including publication of manuals for staff
Group discussion
Documenting experiences

Conclusion and Future Work

This paper is part of a larger a multidisciplinary research project that aims to find methods for enhancing knowledge management and knowledge sharing in academic libraries. This paper focuses on aspects of knowledge sharing practices in academic libraries particularly those that deal with organisational, technological and managerial factors associated with knowledge sharing, hence our integrated knowledge management approach.

We started by proposing a modified version of an existing process model that had been specifically designed for this purpose, but for generic collaborative business processes. The authors were the first group of researchers who utilised this conceptual model for the domain of academic library. For that reason it was seen more appropriate to assess the quality of the proposed model in terms of its suitability in addressing library processes as well as its practicality and usefulness in the domain of academic libraries.. The model was then assesses using the Conceptual Model Quality Framework (CMQF). Results of this evaluation confirmed the LKSM's suitability for both of the above purposes; and this in turn prompted us to confidently utilise our limited resources to investigate both the actual state of knowledge management practice in academic libraries, that in turn may shed lights on identifying librarians' need for enhancing these practices.

 Since the reference and information services in any academic library is an information-rich process dealing with various kinds of knowledge transformation, exchange and storage of information, this process was used as a domain for the proposed conceptual model; however the methodology introduced in this paper can be equally applied in any other knowledge-intensive collaborative processes in academic libraries.

Answers to the survey questions were collected from 30 academic librarians mostly from the American university libraries, who are the members of RUSA discussion forum. Results show that most librarians use both formal organisational procedures as well as informal face-to-face communication methods for capturing knowledge about information sources. At the same time less number of librarians tend to communicate with academics and with other libraries as their information sources (40% and 53% respectively). While all the above sources provide equally useful sources for this

purpose, a lack of tendency in using the former two sources need to be further investigated in future studies. One possibility might be a lack of suitable policy in the library.

On the other hand, most librarians mainly use informal face-to-face methods for acquiring information about users and their information needs. However, the major problem with this method is that such interpersonal communication method is generally considered as a less valid source for capturing knowledge about information needs of users. Authors believe that providing a formalised procedure for improving validity of results obtained from face-to-face communications, in the form of appropriate ICT (Information and Communication Technology) infrastructures supporting such socialisation process can certainly enhance effectiveness of knowledge sharing processes in university libraries. As a complementary solution it may also be appropriate to nourish a culture that values credible information.

Looking at the above problem differently, one can also infer that since some of the existing formalised ICT infrastructures have functional view instead of being integrative, incorporative multiple business processes within the libraries may also be responsible for discouraging librarians to use existing functional ICT infrastructures. More studies need to be done in order to provide a definite answer to this question.

After the above discussion on the current practice of knowledge management in the university libraries, following list is presented and shows our findings on the knowledge sharing requirements of librarians:

1) Specific knowledge management policies and strategies are currently missing in majority of today's academic libraries. Authors propose a more active stance on this matter while care to be taken to adopt integrative approach rather than a traditional functional view.
2) Like any other resources, knowledge also needs a custodian for protection. It is suggested that to achieve this and the related purpose in 1 above at least a knowledge management unit or officer should be appointed as a starting point to overlook all these activities.
3) Appropriate ICT infrastructures for supportive cross-functional areas within the academic libraries is highly recommended for facilitation of the 1 and 2 above.
4) It was also noted that providing a variety of communication channels for librarians might enhance both efficiency and effectiveness of their communication and subsequent knowledge sharing activities.

Required KM policies/procedures and strategies, and corresponding ICT support mentioned in the '1' and '3' above can be classified, in the light of Nonaka's SECI framework (Nonaka, 1998), in the following four categories:

(i)   Those that correspond to the conversion of tacit to tacit knowledge (*socialisation*). This type of knowledge sharing is related to the self development of librarians through modifying and enriching their own experiences and mental models through informal interactions with others. One solution is to facilitate interpersonal communication between experts and librarians through various existing ICT infrastructures.

(ii)   Those that correspond to the conversion of explicit to tacit knowledge (*articulation*). Classic examples include expert databases or FAQ databases that are based on tacit knowledge of others, organised in a way that can be stored within, and access from, computerised systems. Existence of such databases in libraries can enhance organisational learning among librarians.

As shown above, while this paper provides some solutions for enhancing knowledge sharing in academic libraries, some of these solutions themselves require elaborate investigations before organisational resources are utilised to implement them. These issues, and further validation of our interim findings in this paper constitute the bulk of the authors' futur research.

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Figure 1: An LRKM for the RIS Process

R 1