



## A Theoretical Framework for Development of a Customer Knowledge Management System for Academic Libraries

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### Abstract:

*Like any other organisations in today's knowledge base economies, academic libraries are subject to constant changes. This is based on the changes of the environment surrounding them. The ability of these organizations to produce timely responses to these changes would enhance survival rate, growth, and competitive advantage. This paper focuses on providing an analytical tool that can both improve current services as well as creation of innovative services within academic libraries. By relying on the authors' own experiences in managing academic libraries as well as expertise in knowledge management field, this paper proposes a conceptual framework for managing various knowledge-related activities specifically related to the customers' knowledge in academic libraries. The proposed framework is called Customer Knowledge Management (CKM) and has two major components: (i) a generic integrated model for managing knowledge for academic library as a context for investigating customer knowledge management, and (ii) a methodology for integration of various types of customer knowledge in academic libraries in order to improve existing services and/or create new innovative services in academic libraries.*

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## **Introduction**

Libraries are knowledge creation enterprises where large amount of knowledge is created regularly during various knowledge-related activities. One major source for customer knowledge is the 'library users'. They are referred to in this study as 'customers' and 'clients'. One major implication for librarians interfacing with their clients is that they must respond to the informational and service requirements of these clients which in turn reflect overall changes in the social, economic and political conditions. This means that librarians must be change agents and library services must meet emerging needs of their clients over time.

Historically, Knowledge Management (KM) has been acknowledged for its role in facilitating provision of appropriate services to customers. In developing KM systems for academic libraries, it is essential to define the processes of capturing and exploiting not only the knowledge and expertise of librarians (as is common in many of today's libraries), but more importantly, the knowledge that resides in clients.

Successful organizations have already put considerable efforts in acquiring knowledge from their customers. Many of these organizations have developed KM systems that integrate knowledge of their employees' and customers. On the other hand, Bose and Sugumaran (2003), Davenport (1997) and Grant (1996) state that the major challenge of managing knowledge is less its creation and more its capture and integration. Libraries are not exceptions and are starting to apply KM methodologies for improving their service delivery and utilization. Despite considerable research in library and information discipline about clients' needs, their information retrieval behaviours, and clients' feedback about library and its services, there is little evidence on how to organize various types of clients' knowledge.

This paper aims to provide theoretical foundation required for construction of a conceptual model that facilitates management of various knowledge-related activities in relation to the customers' knowledge in academic libraries. The proposed model is called Client Knowledge Management (CKM) and its purpose is to facilitate organization of the customers' knowledge in academic libraries. Organizing customer knowledge on the other hand would require certain activities. The activities presented by the proposed CMK model include capture, dissemination, acquisition, application, utilization, evaluation, and communication of the customer knowledge and are linked in a cyclical form. This in turn is expected to improve services that academic libraries provide to their clients. Since literature on CKM in the

domain of library and information science is quite limited, the present study also provides a summary on the current literature on CKM in general.

### **Managing Customer Knowledge in Academic Libraries**

In the library context in general and in academic libraries in particular, it is essential to ensure quality of customer services. All three major traditional categories of academic library customers, including undergraduate students, postgraduate students, and academics, generally have high expectations about services they receive from the library (e.g., McCombs 1992 & Strategic ...2007). This requires that librarians must not only have explicit knowledge about their clients' needs but also to acquire appropriate knowledge from them, sometimes in implicit forms, such as customers' insights, feedback, suggestions, knowledge of industry and competitive environment, latest news fresh from Schools/Faculties meetings, etc.

The role of customers in generating ideas has already been recognised by many (e.g., Möller, 2006; Yakhlef, 2005; Gibbert, et al., 2002). It is a widely accepted fact that in knowledge economies, customers are not simply passive audience but they are active knowledge partners (Leibold, et al., 2005). Gibbert, et al. (2002) point out that customers' input about their contexts and perception of services are substantial and valuable to organizations; and yet only a few organisations actually manage well "their perhaps most precious resource: their clients' knowledge."

### **Literature on Customer Knowledge Management (CKM)**

In this section the current literature on CKM is reviewed with the aim of highlighting relevant theoretical background that resulted in development of the proposed CKM system for this study. This review is divided into five sections. The first section explains the currently used categories of the customer knowledge. Next, the two managerial concepts 'customer knowledge management' and 'customer relationship management' is explained and their relationship to one another is highlighted in order to provide a common understanding on the assumptions made in the present study before the CKM model is discussed. The third part of the literature review includes the concept 'integrated knowledge management systems' and the benefits that integrated KM system provide. In the last part, current knowledge management frameworks are briefly discussed as a precursor for presenting the proposed CKM framework.

## 1. Definition of Customer Knowledge.

From an organizational perspective, and disregarding the library's organizational contexts, aims and approaches, customers' knowledge can be categorized at least into the following three classes.

- *Knowledge About Customers (KAC)*: This category deals with factual information about the clients (e.g., gender, educational background, research area/s) as well as customers' information needs and their interests. Examples of this knowledge include "certain academic member needs to order a specific journal article", OR "an undergraduate student is spending the next two semesters in another university as a visitor student and would require more specialized services". This type of knowledge is normally explicit by nature and therefore is codifiable and can be stored in, and accessed via, traditional knowledge repositories and retrieval systems in many of the today's academic libraries. Other common methods for capturing this knowledge is through the user surveys, online methods, and perhaps less direct methods such as studying students' enrolment records for the next year. On the other hand, since librarians are in constant interaction with their clients, their tacit knowledge about their clients' behaviour and needs should not be ignored. The KAC therefore includes both tacit and explicit knowledge about the customers.
- *Knowledge from Customers (KRC)*: This category deals with the clients' perceptions, insights, reactions, suggestions, their knowledge of competitive environment (e.g., Google), and comments about existing services provided by the library, and their expectations about existing and future services.
- *Knowledge For Customers (KFC)*: This category focuses on the knowledge that library provides to its clients either in the form of final services, or an interim knowledge that can be used by their clients for performing other tasks such as preparing a promotional research profile by academics. KFC is contextual and differs from library to library. It is also dynamic, and therefore today's knowledge may not be useful tomorrow. And finally, it is actionable in the sense that it can potentially trigger a desirable and knowledgeable action or decision by the library clients. Although all service based enterprises, including libraries, provide various services to their customers, an essential and logical relationship between different

kinds of customers' knowledge is usually missing (Tian-Xue Feng, Jin-Xin Tian, 2005). The present study asserts that in academic libraries, the KFC is a product of an integration and transformation of the KAC and KRC.

**Table 1 provides a summary of various dimensions of the customer knowledge categories.**

	<b>Knowledge About Customer (KAC)</b>	<b>Knowledge From Customer (KRC)</b>	<b>Knowledge For Customer (KFC)</b>
<b>Aims and application</b>	To understand the requirements of clients in order to address them, to aim at right services to make appropriate strategic decisions.	To enhance services and products. To identify future needs for innovation. To sustain continuous improvement of services, To satisfy knowledge needs of clients,	To match the services and information materials with clients' needs, To change the client's preferences , To satisfy clients' knowledge needs.
<b>Methods of knowledge acquisition</b>	Clients' profile, face-to-face communication with all clients, Data mining: data obtained by collecting statistical information, historical data of purchasing, borrowing records, etc. User surveys and all kinds of information feedback from other channels.	Face-to-face communication with all clients, (including the client relation network) User surveys, Suggestion box, Discussion forums, Bulletin boards	Library Website, Announcements, Reference desks and subject librarians, Academics, Instructional programs, User toolkits,
<b>Methods of storage</b>	KM systems, Loyalty cards, Data mining, CRM systems, Internet, email, Call centre contacts	Database, Discussion forum reports and documents, Bulletin boards, Suggestion box, Feedback system (including suggestion forms)	Databases (OPACs, ...), Websites, Newsletter, Notices, Boards, Signs, Information sheets, Workshops, Library Journals & newsletters

Some researchers (e.g., Bueren et al., 2004; Su, Chen and Sha, 2006) have emphasized that for development of any CKM, the above three categories of customer knowledge must be given serious consideration.

## **2. Customer Knowledge Management (CKM) and Customer Relationship Management (CRM)**

The CKM consists of all processes and component technologies for capturing, sharing, and applying clients' knowledge. Guoqing (in Feng and Tiang 2005) argues that CKM is "a dynamic recycling process of acquiring and refining valuable customer knowledge by means of various paths and methods". Implementing CKM requires appropriate environment and facilities (Ibid).

The focus of the CRM on the other hand is on integration of client based information into the management information systems. It is a collection of knowledge oriented processes and according to Gebbert et. al. (2002) the ultimate aim of CRM is to provide a balance between companies' investment and customers' satisfaction. Since compared to the CKM, the CRM, has more limited and focussed scope, and on the other hand it solely deals with one type of customer knowledge, the knowledge about customer. Therefore, in this study, the CRM is regarded as a subset of CKM.

## **3. Customer Knowledge Management System (CKMS)**

The CKM is a system for enaction of various CKM activities and relevant controls with the aim of organizing and utilization of customer knowledge. It consists of at least three components:

- a. Information Management component, such as content management subsystem for coding, organizing, & making of information sources and repositories (Bueren et al. 2004; Schotte 2004; Bose and Sugumaran, 2003).
- b. Information Technology component, such as Intranet, emails, databases, weblogs, websites, alerting system, bulletin boards, chat facilities, etc. IT component facilitates knowledge acquisition, organisation, dissemination, access and application. (Dalkir 2005).

- c. Strategies, procedures and policies for creating a “balance between innovation and organizational structure” (Dalkir 2005) and concern about appropriateness of CKM activities such as acquisition, creation, integration and usage of knowledge.

In CKMS, the above components ensure (i) selection of appropriate knowledge, (ii) proper building of knowledge repositories, (iii) workability of the process of managing the knowledge, and (iv) integration of all knowledge and application of the results in creation of new knowledge and services. It is therefore, crucial for survival, development and stability (Alavi 2002).

In short, and according to Jashapra (2004) a CKMS integrate all the above three components to ensure they are working together and provide innovative and suitable services.

#### **4. Knowledge Management Frameworks**

Several frameworks have already been developed for implementation of KM systems. Some of the major and relevant frameworks are presented in the following paragraphs:

Gebert et al. (2002) proposed a KM model for achieving four fundamental goals. These goals are: 1) knowledge transparency; 2) knowledge dissemination which is related to the degree/intensity of knowledge distribution; 3) knowledge development which is based on the degree of knowledge adaptation and creation; and 4) knowledge efficiency. This model focuses on the selection of crucial customer knowledge from among various available kinds of knowledge.

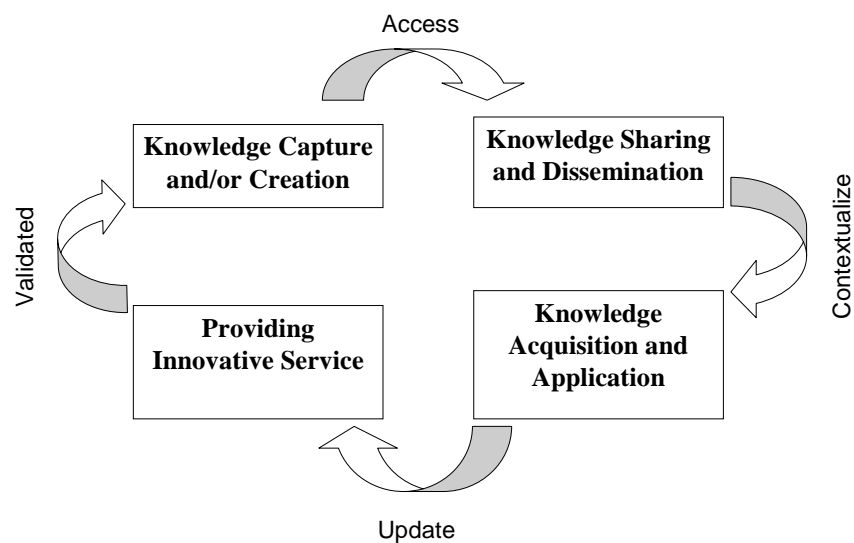
Bose and Sugumaran (2003) propose an integrated KM and CRM model that also includes a knowledge learning loop. The components of this model are IT-based collaborative components, information management tools, and processes for capturing, managing, creating, disseminating and sharing knowledge.

Dalkir (2005) reviewed a number of KM models and has developed an integrated model for knowledge cycle. The three cyclic stages of the model are: 1) knowledge capture and/or creation, 2) knowledge sharing and dissemination, and 3) knowledge acquisition and application.

## **A Conceptual Framework for Customer Knowledge Management in Academic Libraries**

The present study extends the three stage CKM cycle model by Dalkir (2005, p.43) by introducing additional activities and relevant knowledge transformations that needed to be explicitly address when applied to the today's user-centric academic libraries. The proposed CKM framework demonstrates various customer knowledge activities and their relationships to one another and can be used as an analytical tool for design and implementation of CKM systems in academic libraries that are characterized by their strong customer-centric and knowledge-based orientations.

The main criteria for selection of Dalkir's CKM cycle model for the present study is (i) its emphasis and explicit recognition of cyclic nature of knowledge activities. A cyclic model of customer knowledge activities is representative of many of today's academic libraries that are adopting customer-centric approaches to their management in increasing numbers, as opposed to the traditional static models of knowledge management; and (ii) the Dalkir's model provides required flexibility to accommodate additional KM activities, in our case, 'providing innovative services' activity, addition of a control concept called 'validation/evaluation' phase, and finally, the relevant knowledge transformation concepts, when considering integration of customer knowledge in academic libraries.

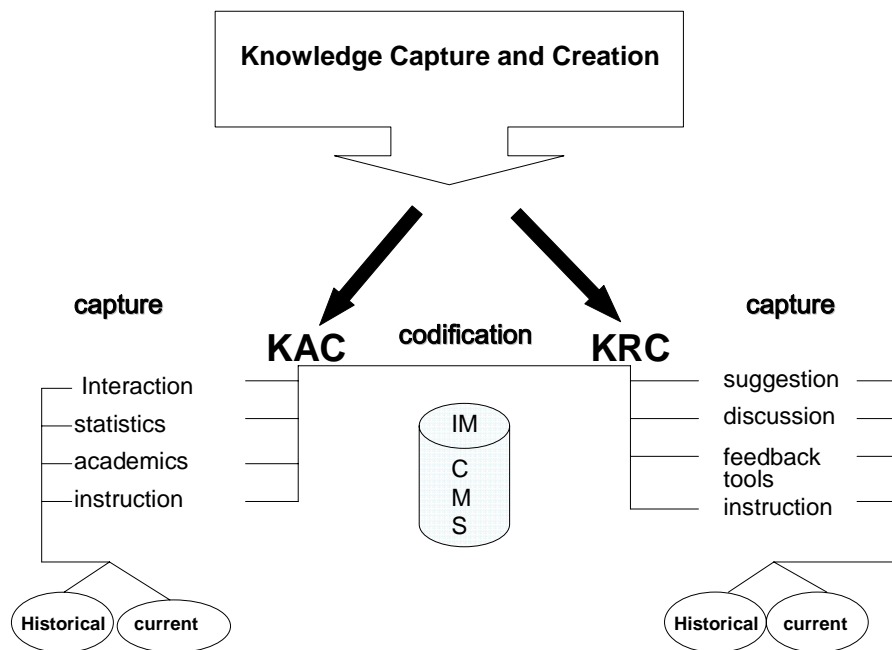


**Figure 1: An Integrated CKM cycle model for academic libraries**



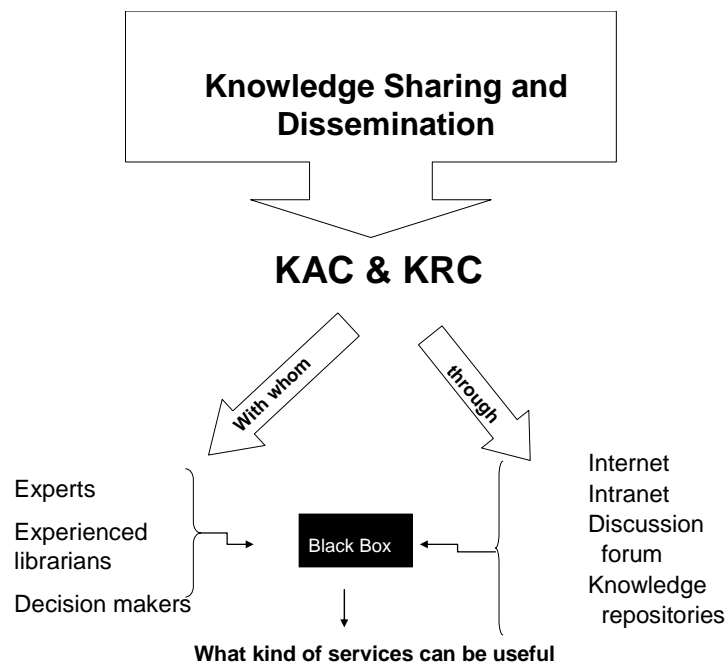
In Figure 1, various activities are performed in relation to the customers' knowledge, each resulting a different knowledge transformation. Starting from the K-capture/creation, KAC and KFC are captured either directly or indirectly (e.g., face to face contacts, mining and knowledge discovery methods, etc.). The captured/created knowledge is then accessed and shared by the librarians in order to be 'contextualized' and then used for enhancing/updating existing services and/or development of new and innovative services. These services are then provided to the customers for 'utilization'. Knowledge utilization by customers will create further customer feedback, which in turn is used by the librarians for evaluation of these services. Results of this evaluation together with customer's new knowledge about new/updated services will in turn constitute new knowledge from/about customer. This new knowledge will then need to be captured, and the cycle continues. Detailed explanations on each of the four cycles in Figure 1 are provided below.

*Knowledge Capture and/or Creation Phase:* This phase is related to two types of customer knowledge, that is KAC and KRC. These types of customer knowledge are initially captured/created either by direct contacts with customers, or through other methods such as data mining and knowledge discovery, etc. This phase is shown in Figure 2.



**Figure 2. Knowledge capture and creation in academic libraries**

*Knowledge Sharing and Dissemination Phase:* Detail about this phase is shown in Figure 3. During this phase the created knowledge from the previous phase is integrated (also see Figure 5), and then disseminated and shared among librarians whom might be experienced librarians or/and educated ones and other decision makers within the library. However, sometimes for understanding the users needs and being able to provide adequate services or to match services with suitable philosophies and theories it is crucial for librarians and decision makers within the library to share the knowledge which was captured from the previous phase with some experts in LIS or other related disciplines. The underlying aims of this phase are (i) satisfying immediate needs of customers, (ii) enhancing existing services, and (iii) designing new and innovative services. Further details about integration of the KAC and KRC are provided in a later section.

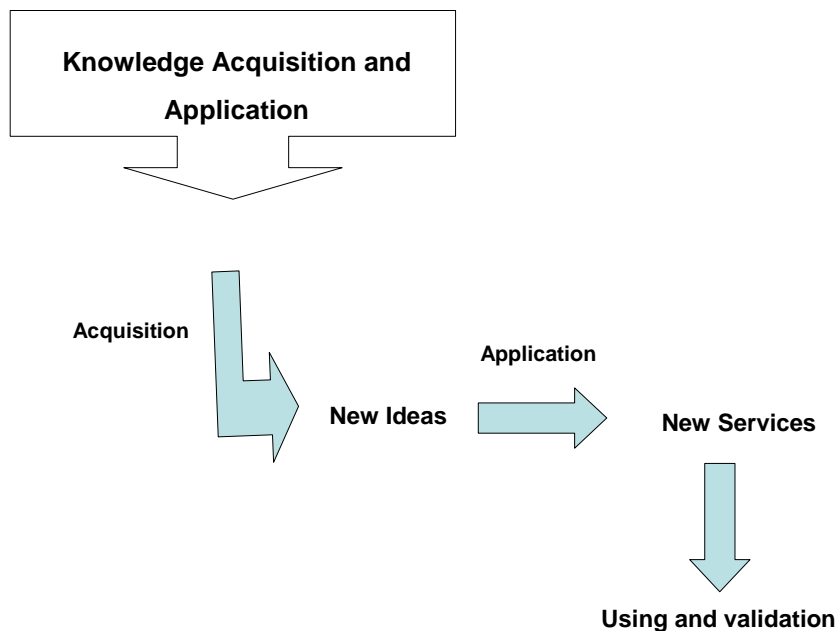


**Figure 3. Knowledge sharing and dissemination in academic libraries**

*Knowledge Acquisition and Application Phase:* Knowledge sharing among librarians and integration of KAC and KRC create new tacit knowledge which is necessary for understanding customers' information needs and interests. This understanding by librarians, of the KFC is called 'knowledge acquisition; and applying this knowledge to either

enhance/update existing services or create new services, is called ‘knowledge application’ in figure 4.

*Providing Innovative Services Phase:* Based on ideas generated in the previous phase, new services are formulated and provided or - as mentioned above – the existing ones are reengineered. As a result of customers’ exposure to these services, additional feedbacks will be created by customers in relation to these services. This and other kinds of feedback from customers, which are categorized as KRC, are then used by the library for ‘evaluation’ of their services. Among other things, such evaluation would be consistent with the current quality management principles in the sense that customers are taken as the ultimate judge of service quality within the library. This ‘evaluation’ process is further displayed in Figure 4.



**Figure 4. Knowledge acquisition and application and provision of services in academic libraries**

## **A Methodology for Integration of KAC and KRC**

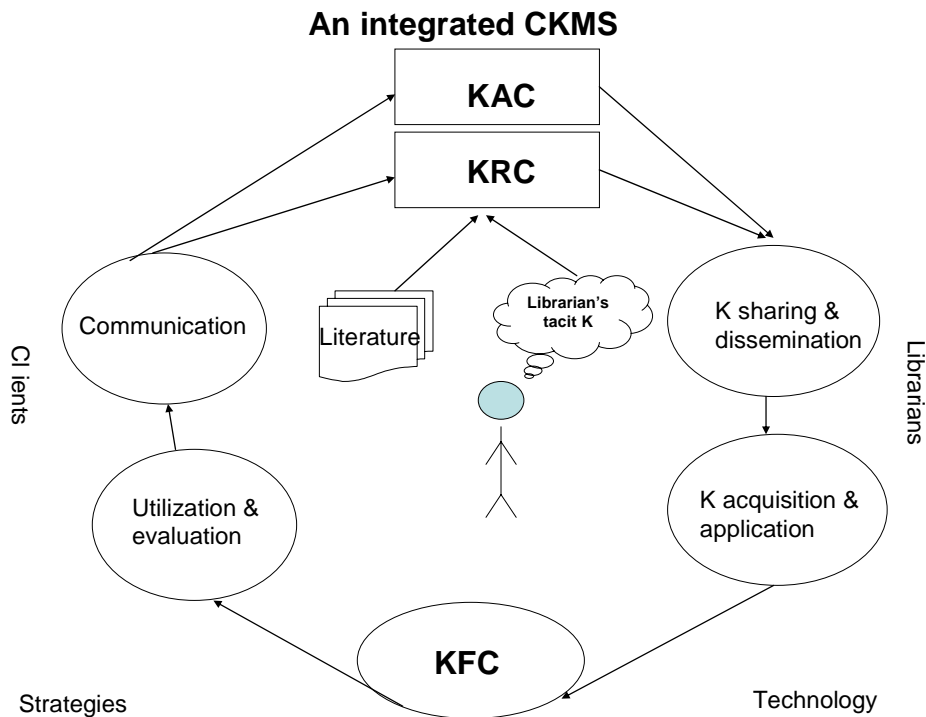
The integration of KAC and KRC at conceptual levels is shown in Figure 5. The ‘new ideas’ which are shown in Figure 4 are in fact the result of such integration.

Generally speaking, the customers of academic libraries are either students or academic members and the feedback generated by these groups during their various interactions can

potentially be valuable for the success of the library. However, academics' role is two fold. They not only can provide feedback about the library services that are specific to the academics, but they can also provide feedback regarding the library services for students. For this reason the present study has mainly focussed on the academic customers. This argument also reveals the necessity of adopting an integrated approach for analysis and design of KM systems in general, and CKM systems for academic libraries in particular.

One such integrated model is applied to the academic libraries, and is shown in Figure 5. According to this model, the KAC and KRC are captured from customers. Being intelligent agents, librarians themselves are also expected to collect certain tacit knowledge 'about' and 'from' their customers. And finally, the available literature on various relevant domains may also be used as yet another source for collecting KAC and KRC.

Next, the captured customer knowledge is then shared and disseminated among the librarians and library decision makers so that it can be correctly understood and interpreted. This phase is called 'acquiring knowledge'. It then needs to be 'applied' to the current services so that appropriate new/updated services can be created, and (usually) enabled by ICT. It then is provided to the customers for their 'utilization'. This will generate new customer feedback, which in turn will be used by the librarians for 'evaluation' of the library services. Results of this evaluation together with the customers' feedback are then used as new KAC and KRC, and the cycle continues.



**Figure 5. An integrated Customer Knowledge Management System (CKMS)**

## **Conclusion and Future Research**

In knowledge base societies in which knowledge cycle constantly creates new knowledge, clients' needs and expectations change constantly. Since libraries are user centered organizations, their services should be changed according to the changes in users' need and expectation. One commonly adopted solution is to build services through close cooperation between clients and the organization, in this case, the academic librarians. Clients' feedback about library services is a kind of cooperation which not only enhances services, but also increases organizational learning skills in clients and creates value. Such new services support educational and research needs of academics and students. Therefore, there has been a shift towards acquiring knowledge from the clients as well as integration of knowledge from customers and knowledge about customers in order to produce knowledge/service for customers (Gebert et all 2002) The present study was conducted as a direct response to such needs of today's academic libraries that operate in knowledge economies. And the ultimate goal is value creation.

This paper proposed an integrated conceptual framework for organising customer knowledge in academic libraries with two major components: (i) an integrated KM cycle model for demonstration of various knowledge management activities that are specific to many of the today's academic libraries, and (ii) a methodology for integration of various types of customer knowledge in academic libraries in order to improve existing services and/or create new and innovative services in academic libraries. The contribution of the present study can be explained by specific benefits that the proposed framework can provide to the academic libraries that operate in knowledge economies. The framework was the result of the authors experience and expertise in both library management and knowledge management. The benefits of the proposed framework include:

- (i) it demonstrate the four generic knowledge-related activities for transformation of all types of knowledge within academic libraries. This overarching KM framework provides a context for investigating customer-specific knowledge in academic libraries,
- (ii) using the case study organization, details of each major KM activity that are involved in transformation of customer knowledge are identified. These details are expressed in terms of their various steps and the knowledge artefacts that are used within each step/activity. This in turn can be used to identify major relevant entities/roles/actors and tasks for each activity.
- (iii) As a result of identifying relevant tasks and entities involved in each activities, the proposed framework then provides a methodology for integrating, and ultimately organizing customer knowledge in academic libraries. This in turn is expected result in improved services as well as creation of innovative services within the academic libraries.

The major limitations of the present study and subsequent plans for further investigation on this field are:

- (i) The proposed theoretical framework does not include factors related to the national and organizational culture. This constitutes on of the most immediate future studies by the authors
- (ii) Future case studies incorporating cases from various national and international academic libraries will be conducted to increase generalizability of the results to other contexts.

- (iii) Work is also in progress for building a customer knowledge management system for the case study organization.

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