



# Measuring Strategic Value of Knowledge Using Knowledge Lifecycle Model: A Case of Indian Banking

**Himanshu Dutt**

Centre for Management Studies  
Jamia Millia Islamia  
New Delhi  
E-mail: himanshudutt@gmail.com

**Furqan Qamar**

Jamia Millia Islamia  
New Delhi  
E-mail: furqan.jmi@gmail.com

**Vidhu Shekhar Jha**

Professor of Strategic Management  
Lal Bahadur Shastri Institute of Management  
New Delhi  
E-mail: vidhushekharj@gmail.com

## Abstract

Due to constant surge in knowledge demand, it is suggested that organizations measure strategic value of their knowledge, to separate the critical knowledge, reduce information clutter and fight cognitive overload. This is done by examining the knowledge elements that are more critical to organizational success than others. The approach is largely based on finding out the contribution of each knowledge element under stages of knowledge lifecycle. Accordingly, the knowledge development capabilities can be improved. The concept serves as one approach to measure knowledge in the organizations. It identifies high strategic value knowledge elements for each knowledge lifecycle stage based on their contribution towards building knowledge. Similarly, low-value knowledge elements for each stage of knowledge lifecycle can be identified, and improved, restructured or dropped. Strategic value of knowledge thus can be measured by segregating high to least contributing knowledge elements using the knowledge lifecycle model. This will help organizations to focus on improving competitiveness by augmenting their critical knowledge source and improving the ones that have potential to contribute more. Indian commercial banks have been taken as an example to validate the knowledge lifecycle model using Confirmatory Factor Analysis (CFA) for the purpose of this research. The knowledge lifecycle model that serves the basis for this research has been developed from the literature review on Knowledge Management.

**Keywords:** Knowledge Lifecycle Model, Knowledge Management, Knowledge Elements, Stages of Knowledge Lifecycle, Indian Commercial Banks, Confirmatory Factor Analysis, Strategic Value of Knowledge.

## Strategic Value of Knowledge

Increasing commodification of intellectual capital has made knowledge management (KM) a crucial function. Globalization and market competitiveness require organizations to become knowledge-intensive. Due to constant surge in knowledge demand, it is suggested that organizations measure strategic value of their knowledge, to separate the critical knowledge, reduce information clutter and fight cognitive overload. This is done by examining the knowledge elements that are more critical to organizational success than others. It calls for scrutinizing what they know about their customers, products, processes, mistakes and successes accumulated over a period of time.

This approach is largely based on finding out the contribution of each knowledge element in building knowledge in the organization. Accordingly, the knowledge development capabilities can be shaped and improved (Dutt, Jha and Qamar, 2010). In fact, it becomes more meaningful to measure knowledge because there is a difference in knowledge requirements for each organization. And therefore, organizations must find out their core knowledge activities which is evident in what they do and how (Zack, 2003). These activities reside in how products, processes, management and technologies interact and integrated within the organization (King, Marks and McCoy, 2002) that helps it create strategically relevant knowledge (Hatten and Rosenthal, 2002).

One such approach to help organizations measure strategic value of their knowledge, based on the contribution of its knowledge elements, has been outlined in this research paper. It is based on the stages of *knowledge lifecycle* model wherein each stage contributes toward building knowledge. Let us describe the knowledge lifecycle model to understand how using its stages the contribution of knowledge elements can be known.

### Knowledge Lifecycle Model

Knowledge is constructed through a systematic set of process defined logically, and stored as a codified object (Murray, 2002). But the challenge is, it is intangible and fragmented and therefore difficult to locate (Davenport, Long & Beers, 1998). It is the ‘meaning made by the mind’ that easily becomes ‘everything and nothing’ (Despres and Chauvel, 1999). It has shorter life cycle due to continuous reduction in lead time for its creation, use and share (Birkinshaw & Sheehan, 2002). But biggest of all is that it deals with how human understanding and mental models are put to work to derive business value (Wiig, 1999) for customers (Quinn, 1992) and improve organizational performance (Ulrich, 1999) to symbolize a learning organization (Senge, 1990). Its composition is agreed to be ‘an organized combination of ideas, rules, procedures and information’ (Bhatt, 2000) yet it lacks clarity as a concept being multifaceted. The epistemological dimension of knowledge suggest two views – ‘knowledge as resource’ that can be possessed, and ‘knowledge as process’ that helps leverage the knowledge between those who possess it and those who use or develop it to add value to it (Assudani, 2009). *Knowledge as process* by definition resembles the knowledge lifecycle model whose stages also deal with the same task of creating, sharing and using knowledge and thus, fills the gap between the seeker and the producer of the knowledge. Let us start with defining the each stage, broadly.

Successful organizations manage a continuous cycle of creating, managing and sharing knowledge which defines their core-competency (Salisbury and Plass, 2001). Managing this cycle requires an integrated process that can address the complexity of managing the knowledge. This integrated process broadly is referred to as knowledge lifecycle. First stage is knowledge creation which is when organization solves a unique problem or a big problem in parts. Second stage is preservation of knowledge that records the problem and its solution generated in the first stage as a new knowledge. Third stage is dissemination of the preserved knowledge that becomes the input for solving problems further. Each phase thus, is the input for another phase in a cyclical manner to build knowledge upon itself (Salisbury, 2003).

This concept serves as one approach to measure knowledge in the organizations. It identifies high strategic

value knowledge elements for each knowledge lifecycle stage based on their contribution towards building knowledge. Similarly, low-value knowledge elements for each stage of knowledge lifecycle can be identified, and improved or dropped. Strategic value of knowledge thus, can be measured by segregating highly contributing to least contributing knowledge elements using the knowledge lifecycle model. This will help organizations to focus on improving competitiveness by augmenting their critical knowledge source and improving the ones that have potential to contribute more. Let us discuss the relevant literature concerning knowledge lifecycle model further to present a detailed model.

Junnarker (1999) describes K Mas based on five processes. These are: 1) process of connecting people to knowledgeable people; 2) process of connecting people to information; 3) process of converting the information into knowledge; 4) process of codifying knowledge for transfer and; 5) process of facilitating knowledge transfer across the organization. Liebowitz (2000) prescribes it as a nine-step approach whose stages are 1) transform information into knowledge; 2) verify it; 3) capture and secure it; 4) organize it; 5) retrieve and apply it; 6) combine it; 7) create new knowledge; 8) learn; and 9) distribute it. Sharp (2006) segregates these steps or processes under three categories of development as – one that emphasizes use of information technology; two as human function; and three as a process that bridges technology and human perspective together. Thus, a variety of approaches prescribed in the literature define KM as a process based on the ‘stages of knowledge lifecycle’. A comprehensive knowledge lifecycle model adapted from Bukowitz and Williams (1999) presented in the *figure 1* aptly defines the knowledge lifecycle. This model serves as the basis for the present research.

*Due to constant surge in knowledge demand, it is suggested that organisations measure strategic value of their knowledge, to separate the critical knowledge, reduce information clutter and fight cognitive overload.*

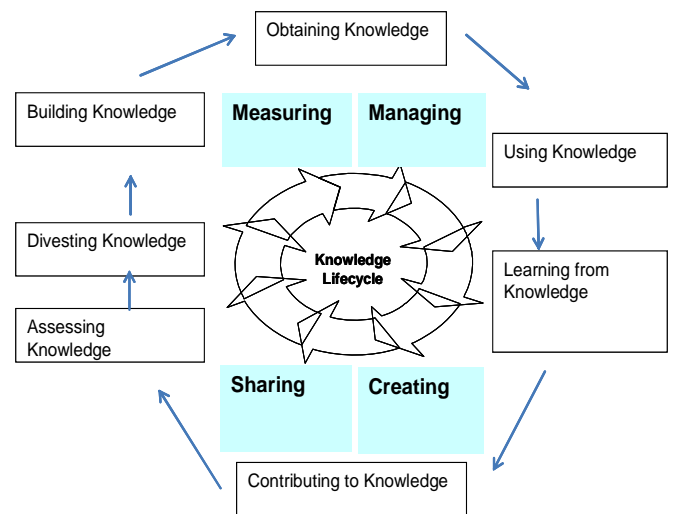


Figure 1: A Model of Knowledge Lifecycle

The model adequately serves as a criterion for evaluation of the strategic value of organizational knowledge. It explains how organizations can create and add more value to the task of value creation – converting the demand side (knowledge seekers) to supply side (knowledge creators) (Metaxiotis, Ergazakis and Psarras 2005) identifying critical knowledge element that help more than other elements in creation, use and sharing of knowledge. Knowledge lifecycle thus, can be characterized with KM which is a formal process of identifying the knowledge needs, and using it to organization’s benefit and further devising ways to make it available to the concerned members (Singh, 2008). In other words, knowledge lifecycle can said to the manifestation of a KM framework. This idea has resulted in learning curves for organizations to adapt quickly, respond faster, and to proactively shape their business.

It will be significant here to describe broadly the elements of knowledge lifecycle to understand what elements can be characterized with what stage. Having known the critical knowledge elements, organizations can fill the knowledge-based gaps, discover new arrangements to create its knowledge-mix and acquire knowledge at faster pace and at lesser costs. After an overview of knowledge lifecycle model, let us describe its elements in detail to analyze the overall model.

*Knowledge lifecycle model adequately serves as a criterion for evaluation of the strategic value of organisational knowledge. It explains how organisations can create and add more value to the task of value creation.*

**Elements of Knowledge Lifecycle**

Knowledge is a complex phenomenon because it comes from cognitive structure of people in organizations who reorganize information to derive meaning (Sussman and Seigal, 2003). This organizing of credible information into knowledge (Hult, 2003) using technologies, information-sharing culture, processes and management is labeled as knowledge management (Long and Seemann, 2000). The KM concept is based on the premise that value is extracted

from the stocks of knowledge (Curado, 2008) that gets accumulated over a period of time. It is because knowledge is the driver of this value creation which is extracted externally and applied internally using knowledge management (Mahesh and Suresh, 2009). But how this value can be extracted rests upon the organization’s composition of knowledge lifecycle elements. Conceptually, a knowledge life cycle is composed of creating, managing, sharing and measuring of knowledge. A stage-wise classification of knowledge lifecycle is presented in the figure 2. Knowledge is obtained from pre-accumulated data managed through record-keeping. It is created using data or information combined with experience, skills and cognitive capabilities to take decisions, practicing which organizations learn about successes and failures. Accordingly, improvement in the body of organizational knowledge is made through contribution of individuals and groups who collectively build it through sharing. Sharing allows them to assess the worthiness of knowledge to their and organization’s context of use. Knowledge that produced failure, not required or not aligned to accomplish organisational goals is divested systematically, and knowledge that matches the core requirement is

collectively built in order to meet KM objectives. Measuring outcome against the objectives is the final step that adds to the process of value creation. The knowledge elements under each stage are assimilated to produce a knowledge-mix that optimally meets the strategic knowledge requirements of the organization against the set yardstick. Defining each of these elements will help us study their contribution in the knowledge-mix and hence in knowing how critical their role is in meeting organisation’s knowledge demand. It will also throw some light on challenges faced during each stage of knowledge lifecycle. Let us deal with each one of these individually, starting with managing the knowledge.

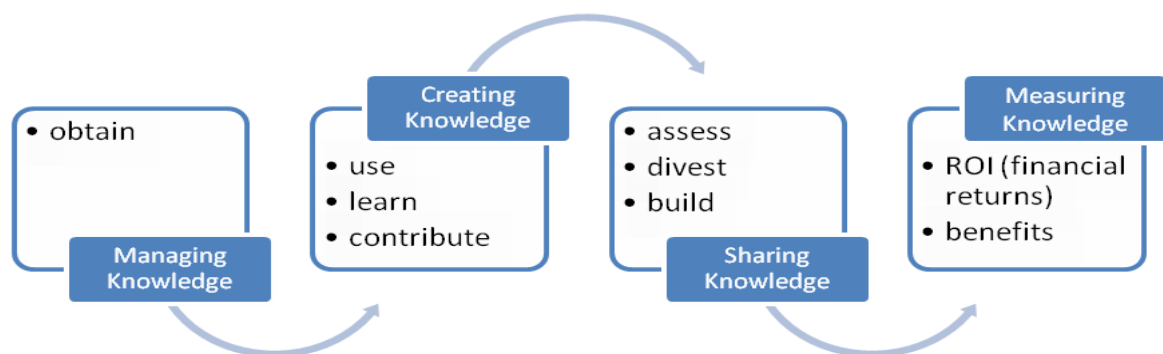


Figure 2: Stages of Knowledge Lifecycle

**Managing Knowledge**

Managing as personal and intangible as knowledge is difficult. On one side, it is largely cognitive and therefore highly personal while on the other side top management wants to take control of it (Lang, 2001). To obtain this control, knowledge requires some structure to retain it which is often termed as *organisational memory*. It is because ‘a mass of knowledge goes right out of the door with the person’ when he leaves the organization (Dunford, 2000). It is therefore, managing knowledge becomes important. To manage this knowledge, organizations use techniques and tools that are concerned with capturing explicit knowledge (documenting discussions and learned lessons in databases) or collecting the tacit knowledge (using artificial intelligence and expert systems that anticipates user’s need of knowledge). It needs continuous track of discussions and decisions, assessing the rationale and identifying the obsolete information.

*The knowledge elements under each knowledge lifecycle stages are assimilated to produce a knowledge-mix that optimally meets the strategic knowledge requirements of the organisation against the set yardstick.*

**Table 1: Barriers in Managing Knowledge**

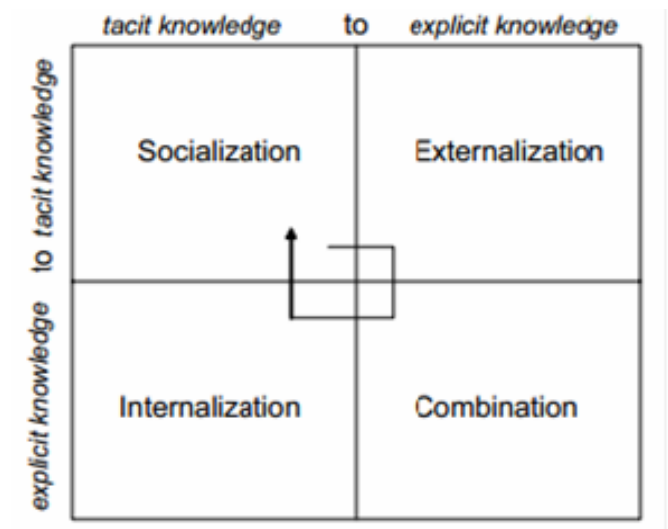
Costly to build knowledge-repositories
KM seen as additional work other than user’s profile
Embedding KM in daily routines is complex and time consuming
Dealing with cognitive overload
Difficult to track knowledge elements / source
Difficult to codify tacit knowledge
Management control of knowledge implies controlling people
Technology-based limitations and infrastructural bottlenecks

Another concern in managing knowledge is its being seen as source of power or control. People with relevant knowledge are perceived as experts and therefore gain status that comes from being ‘owner of the knowledge’. That is mainly the reason why people hoard knowledge – the fear of diminished personal value due to ‘fear of losing one’s unique value’ which is referred to as ‘social dilemma’ in knowledge sharing (Lam and Lambermont-Ford, 2010). It has also been reported that these experts are often too busy to help. Culture is another aspect which is needed to create a supportive environment where people can freely share knowledge without criticism of fear. People will not make use of knowledge if there is lack of openness, trust and respect within the organization culture. Many organizations therefore have roles like - *Chief Knowledge Officers, Knowledge Managers, and Knowledge Specialists* whose dedicated role is to convert knowledge into profit by leveraging the corporation’s intellectual assets and as part of this responsibility transform the organization into

learning organization and develop a knowledge-supported infrastructure (Guns, 1998). But managing knowledge is not free from barriers. Some of these are summarized in *table 1*. Let us look at knowledge creation stage that primarily deals with tacit-explicit based knowledge conversions.

**Creating Knowledge**

Knowledge may find many re-uses in different situations through combinations of new and existing knowledge and produces learning, with its diffusion at lower costs. It is mostly build on organization-specific experience and prior knowledge base by exploiting externally acquired or assimilated knowledge. It is therefore justified that absorptive capacity of an organization depends upon both – interface of organization with external knowledge sources (outside stakeholders) as well as the internal capability of the organization to combine old and new learning to build knowledge and its transfer across the organization vertically and horizontally. However concern here is that knowledge is said to be located between the two extremes – tacit and explicit. The knowledge creation process therefore in literature is prescribed as continuous and dynamic interactions between tacit and explicit forms of knowledge (Sharma and Goswami, 2009). This process based on type of interaction between tacit and explicit knowledge suggests four knowledge conversion modes (Nonaka & Takeuchi, 1995). These are named as Socialization, Externalization, Combination and Internalization (SECI model). This is presented in *figure 3*.



**Figure 3: SECI Model for Knowledge Creation**

Socialization is *tacit-to-tacit* conversion; Externalization or articulation is *tacit-to-explicit*; Combination is *–explicit-to-explicit* and; Internalization is *explicit-to-tacit*. The spiral process of knowledge creation starts with socialization, moves to externalization, combination and then to

www.IndianJournals.com  
Members Conv. Not for Commercial Sale  
25-Mar-2017

internalization before finally coming back to socialization. However it is be noted that before knowledge could be applied to any context it is required to be turned into explicit or codified knowledge (Gourlay and Nurse, 2005).According to Bereiter (2002) the limitation that SECI model have is that it recognizes the knowledge abstracted from a context, but it does not say anything about how it can be managed.

Some methods to share explicit knowledge are through e-mail, forums, and knowledge repositories that reduce time and space between two units of an organization and some methods to share tacit knowledge are apprenticeships, brainstorming camps, use of metaphors and analogies, social network, and learning by doing. Table 2 lists down some of the barriers in creating knowledge. Let us look at some methods of knowledge sharing that is dependent upon developing a learning culture and facilitating the use of technology, chiefly.

***In India, knowledge management-based development has primarily started with corporate (private) sector and now being adopted by the public sector increasingly.***

transmitted. The other way to share knowledge without having to use IT tools is through interactions or conversations, which is simplest as well. Knowledge sharing, thus, is largely dependent upon the interplay between culture and information technology (technical factors). It is here leadership (motivation) plays a crucial role in establishing the effective assimilation of KM practice. Without trust people are not motivated to share, and it is leader’s role to build trust to encourage people to share. This sharing has to be on-going on regular basis because knowledge is dynamic and knowledge sharing is a process of continuous learning. It therefore becomes imperative for an organization to track its ability to share knowledge and measure organizational learning with respect to knowledge management strategies (Vorakulpipat and Rezgui, 2008).

**Table 2: Barriers in Creating Knowledge**

Organization’s inability / in-sensitiveness towards re-use of existing knowledge
Inability to capture knowledge of employees leaving the organization
Knowledge hoarding
Employee’s commitment x competence
Top management leadership efforts to set up KM practice
Organization’s ‘absorptive capacity’

**Sharing Knowledge**

Knowledge sharing (or transfer) has been referred to as transmission of knowledge to the user and its absorption by him. This transmission is mostly facilitated using IT-tools that provides for exchange for both – tacit and explicit (codified) knowledge. The tacit is decoded by the human user for whose absorption the knowledge has been

Success of knowledge sharing is based on organization’s ability to share knowledge embodied and embedded (Madhvan and Grover, 1998) in routines and continuously improving the capabilities to respond quickly to change, innovate and achieve competitiveness (Jasimuddin, 2008). Creation and sharing of knowledge however must visualize 5-key questions (Eppler and Burkhard, 2007): what type of knowledge; why i.e. the purpose and process; for whom i.e. intended users; when i.e. situations, participants, and media; and how i.e. method and format. This is presented in figure 4.

But knowledge sharing has some barriers too. Few of these are presented in figure 5 as prescribed by Riege (2005). It is therefore knowledge sharing requires a mechanism to check the success of knowledge sharing. In fact without measuring all the stages of knowledge lifecycle (i.e. managing, creating and sharing knowledge) with respect to their functions as discussed in the subsequent sections above; the effectiveness of KM cannot be known. Measurement provides a yardstick to measure the knowledge gaps, number of knowledge assets developed and the overall benefits yield. Let us therefore proceed further to understand how knowledge can be measured in general as the literature prescribes.

What?	Why?	Whom?	When?	How?
<b>Know-what</b>	To create	For self	In repositories	Mapping
<b>Know-how</b>	To codify	For others	In conversations	Storytelling
<b>Know-why</b>	To transfer	For team	In presentations	Text/ Tables/Metaphors
<b>Know-where</b>	To learn	For CoP	In virtual environment	Image/Visual
<b>Know-what if</b>	To measure	For stake-holders	In reports	Interactive mode

**Figure 4: A Model for Knowledge Sharing**

Individual-level barriers	Organisational-level barriers	Technology-based barriers
<ul style="list-style-type: none"> <li>• lack of time to identify who need knowledge</li> <li>• fear that sharing may reduce job security</li> <li>• unclear benefits of possessed knowledge</li> <li>• neglecting tacit side of knowledge</li> <li>• large hierarchies</li> <li>• different education, experience, skill-sets</li> <li>• less interaction with knowledge sources</li> <li>• lack of trust – misuse of knowledge</li> <li>• reward for sharing knowledge – compromise quality at the cost of quantity</li> </ul>	<ul style="list-style-type: none"> <li>• lack of direction from top management</li> <li>• lack of awareness about benefits of sharing</li> <li>• shortage of tools for access and sharing</li> <li>• sharing culture missing / not stressed</li> <li>• KM not a priority</li> <li>• no or limited information exchange with external stakeholders</li> <li>• no internal competitiveness among functions</li> </ul>	<ul style="list-style-type: none"> <li>• non-integration of IT systems to communication mediums and work routines</li> <li>• lack of training and technical support</li> <li>• compatibility between tools, platform and individual’s knowledge requirements</li> </ul>

Figure 5: Barriers in Sharing Knowledge

**Measuring Knowledge**

Tacitness serves as a barrier to measurement in terms of identification and evaluation of knowledge created by individuals. Most often knowledge is measured as development of new or differentiated ideas, objects or elaboration or enrichment of existing ones; method or means using which knowledge is created for a certain output; difference between what is known and what must be known. In nutshell it can be defined as any ‘value-adding’ object to organizational performance. Mitchell and Boyle (2010) measure KM as – a process *steps or activities to externalize knowledge*, as an output *(like a new idea)* and as an outcome *(a value-adding object like changed routine or product prototype)*.

*The research centers around measuring the strategic value of knowledge based on knowledge creation abilities of Indian commercial banks using the knowledge lifecycle model.*

Knowledge audits to measure organization’s KM initiatives are normally carried out to assess the kind of knowledge is needed, available, missing, applied and contained within the organizations. This requires finding out source of knowledge, kind of knowledge its people possess and its quality, and the infrastructure that unites culture and business needs by identifying the processes KM should focus upon. It starts with finding out the knowledge needed and how further could it be developed, transferred, used and measured (Levy *et al.*, 2010).

Mostly, measuring knowledge emphasizes on four areas – 1) top and down monitoring and facilitation of knowledge related activities; 2) creation and maintenance of knowledge infrastructure; 3) renewal, organization and transformation of knowledge assets; and 4) leverage of knowledge assets for value (Ajmal, Helo and Kekale, 2010). Ambos and Schlegelmilch (2009) recommends measuring the usage of documents in knowledge repositories (like number of documents read or the adoption of content from documents); assessing the number of contributions and reviews; quality of stored objects; actions taken on knowledge shared and how it is used; and the return on investment in terms of revenue, time and cost saved. Chua and Lam (2005) give three criteria as measurement for knowledge. These are – 1) growth in the resources (multiplication in human capital, increase in knowledge assets); 2) growth in volume of knowledge content and usage (number of documents added, searched, discussed in the repositories); and 3) evidence of increase in financial returns. Thus, KM failure can be described as the practice that has few or none of the above characteristics. But the above criterion does not reflect upon causes of failure or how these factors have been measured to rate the impact in some order. Some of the barriers in measuring knowledge are prescribed in table 3.

Table 3: Barriers in Measuring Knowledge

Tacit nature of the knowledge
Unclear differentiation between data, information and knowledge
Benefit of knowledge largely remains unnoticed
Non-availability of a standardized KM model / framework
Lack of knowledge-focused processes – what knowledge, why, for whom, when, how
Poor top-down monitoring of knowledge-based activities
Incapability to leverage knowledge assets for creating business value (for e.g. due to lack of sharing culture, poor technology infrastructure or unclear knowledge strategy)

After review of literature on stages of knowledge lifecycle and brief discussion on various methods on measuring knowledge, next section presents an account of knowledge management in Indian commercial banks. It becomes significant to discuss knowledge-based developments in banking sector since this research uses Indian commercial banks as case to describe how banks can rate strategic value of their knowledge for improving their KM-based competitiveness. In other words, Indian commercial banking sector has been taken as an example to show how knowledge can be measured using knowledge lifecycle model.

### Knowledge Related Developments in Indian Banking Sector

Information-based developments are pushing Indian economy to maintain competitiveness increasingly. Apparently, the role of knowledge application and its dissemination for commercial and social activities for national competitiveness has grown multifold. National policies centered on enhancing productivity and growth rate are demanding knowledge intensive activities (Chandra and Khanijo, 2011). One such area is Indian commercial banking sector wherein financial reforms as a national policy has played key role in regulating the country's financial health and safety. In India, knowledge management-based development has primarily started with corporate (private) sector and now being adopted by the public sector increasingly. Technology and service – are recognized as its main drivers where multiple technologies are woven into different levels of management structures to create foundation for knowledge society. Knowledge is created into skill to initiate action which becomes a real capital.

Chattopadhyay, Krishna and Singh (2011) have highlighted that knowledge needs to be a part of dynamic system through networks (called as community of practices) that ensures linkages among the people who utilize this knowledge for organization's development. This is how individuals in the communities are empowered to develop competencies to meet their personal, economic, social and environmental needs. But for such networks to work and linkages and become successful, 'self-organization' will be important rather than relying upon technology alone. What should be shared and what should not, flexibility, greater tolerance for trial and error are deeper issues in knowledge management than use of hardware, software and technical knowledge. Such issues can be tackled by self-organization promotion that requires understanding of cultural and social factors impacting knowledge networks (Sankaran, 2011).

For last two decades, Indian banks have been busy in computerizing their manual processes to meet international standards like BASEL norms as part of banking sector reforms. These reforms demand paradigm shifts in manpower

policy, rationalization of business operations, and rapid use of technology (Mohan, George and Nedelea, 2006). This has resulted in creation of multiple information systems processing various data that has led to 'information overload' over a period of time. Banks therefore, require measuring their knowledge assets that differentiate them, yield competitive advantage and bring operational efficiency. Second, banks have learned that tangible assets can help up to a certain extent and realized that they need a broader range of resources to compete and succeed. That is why a number of organizations are now increasingly looking at exploring intangible assets that are mostly left idle, unexplored and unmanaged (Ali and Ahmad, 2006). Third reason is statutory obligations imposed on banks for compliance to risk management. Like every business, bankers are also under pressure to deliver. The enormous amount of responsibility (of economic re-construction) that is entrusted upon banks makes it hard taking decisions of large financial implications. Baruah (2008) suggests that the Indian banking need to explore knowledge on risk

*Banking has come a long way managing a volume of codified knowledge on its multiple products, services and customers across different service channels.*

management while dealing with larger volume of business. Knowledge (management) while has eased this to a great extent; it has in other sense increased the knowledge level manifold complicating the knowledge needs of the banks. While knowledge is very essential, the positive application of knowledge management is most essential. KM in banks thus, can help them become competitive on products and pricing to attract new customers and retain existing, manage their financial resources and networks well for greater business value, and adapt fast to the changes in their regulatory environment for minimizing banking risks (Goyal, 2007).

In nutshell, banking has been deemed as riskiest business that has effects on economy while knowledge has been recognized as engine for growth. Through information, the banks mitigate risks, turning information into required knowledge using collection, compilation, analysis of its massive data. Analyzing volumes of data and information for new products, services and strategies for growth, knowledge management can help banks increasing their capacities. Creating, sharing and applying knowledge helps banks connect its knowledge sources.

The next section deals with a description of the methodology employed in this study to measure the elements of knowledge lifecycle for Indian banks.

### Research Methodology

This study that has been conducted as part of the doctoral research work in area of KM represents one part of a large study which is limited to validation of knowledge lifecycle model for Indian commercial banks practicing KM. The research centers around measuring the strategic value of knowledge based on knowledge creation abilities of Indian commercial banks. Knowledge has become more valuable

than labour and capital (Kumar, Sinvhal and Nangia, 2011) and the transition is taking place from industrial to knowledge economy where knowledge assets derive sustainable business advantage (Prakash, 2011). This change is apparent because knowledge as human capital is being viewed as more an (intellectual) asset than labour or capital. Organizations have started looking at KM as a strategy for dealing with global competition. It is chiefly because knowledge has an important role in considering the direction in which the organizations and society should move. Knowledge Lifecycle as manifestation of KM therefore becomes significant to study. It gives the organization necessary insights about its knowledge mix defining:

1. What elements define knowledge in their organization?
2. What is the contribution of each element in building knowledge?
3. How these elements should be arranged in order to meet strategic knowledge requirements?

These questions as to creation of knowledge and its management are debatable for long. This research attempts to examine these questions using Indian commercial banking sector as case example. The objective is to find out contribution of knowledge lifecycle elements in banks that will enable banks to analyze their composition of knowledge to meet their knowledge requirements and enhance/sustain competitiveness.

The research involved a quantitative research method empirical in nature where relationships are determined using numeric data that allow for presenting and interpreting it. Survey method is used to assist in determining the results. The survey was presented to experienced knowledge management professionals in commercial banks in India mostly at middle senior levels in commercial banks to reflect their attitudes and opinions. 5 point based Likert-type rating scale was used to specify the level of importance against each item on the questionnaire. Likert-type attitude scale is a valid and reliable survey instrument for the measurement of attitudes and consists of a series of declarative statements. It is relatively uncomplicated method of obtaining data on people's attitudes that lets the respondents give self-reported behaviours. As per the requirement of this research, 5-point based interval measurement scale was designed denoted through scores between 1 and 5, where 1=strongly disagree, 3=slightly disagree, and 5= strongly agree. The respondents were asked to rate their opinion on 30 knowledge elements (statements) grouped under 7 stages of knowledge lifecycle as discussed in the literature review presented earlier. The objective is to determine the contribution of each knowledge element. This is presented in the table 4 as research design.

The survey questionnaire is adapted from *Knowledge Management Field book* by Wendi and Bukowitz (1999), and *OECD Knowledge Management Project*. The survey items and the scale of questionnaire have been generalized as per the requirements of study. All survey items were validated in the light of the Indian banking sector using sigma 2-tailed correlations and negative correlations were removed before proceeding to Confirmatory Factor Analysis (CFA) to quantify the contribution of each manifest variable/survey item through path-scores. The data collection took place in the second quarter of year 2010. The survey instrument was mainly administered electronically using survey link and wherever required, personally as well. Request through e-mails were sent to the banks on their corporate websites/e-mail to participate in the survey along with the survey-link followed by reminder e-mails first after 10 days and then again after 5 days. Respondents were also requested to give references to collect more samples of banking professionals in KM roles. 360 respondents in about 26 different banks were contacted for response out of which only 164 qualified responses were received with validity to proceed for data analysis. Qualified response means survey questionnaire

*All the knowledge elements used on the survey questionnaire are valid elements of knowledge lifecycle because each knowledge element contributes positively to the development of the knowledge in the banks.*

duly filled with the all information required except wherever indicated optional. As per the research ethics complete anonymity was maintained about the respondents and therefore, both name of the respondents and the banks were kept optional to ensure confidentiality. Further all the elements of biasness were observed while collecting and tabulating data for error-free results.

Banks have been considered as a case example for the purpose of this study for primarily 3 reasons. First, with computerization of banks as part of financial reforms and its integration towards core banking solutions; banking has come a long way that manages a volume of codified knowledge on its multiple products, services and customers across different service channels. Second, with international norms like BASEL the demand for better technological infrastructure to meet the competitiveness in financial services industry is rising upwardly. Third, risk management is another area that has statutorily required banks to document its processes (service point interactions) and systems (technology, software etc.) for compliance management.

### Research Question

Based on the research model described in figure 1 and 2 and research design in table 4, following research question can be formulated:

*To validate knowledge lifecycle model for Indian commercial banks by examining the contribution of obtain, use, learn, share, assess, build and divest in developing knowledge in the banks.*



Table 4: Research Design

S. No.	Latent Variables (Stages of Knowledge Lifecycle)	Observed Variables (Knowledge Elements)	
1	Obtaining Knowledge	<i>obtain1</i>	Employees provide complete explanations when they make information requests.
		<i>obtain2</i>	Employees routinely document and share information about their expertise.
		<i>obtain3</i>	Information is easy to identify because everyone knows where to look for it.
		<i>obtain4</i>	Employees can search for information across a wide variety of applications and databases.
		<i>obtain5</i>	Employees can quickly contact subject matter experts who play a role in identifying important information and tools for people to work.
2	Using Knowledge	<i>use1</i>	We give all promising idea through consideration, no matter who they come from.
		<i>use2</i>	Involve customer (knowledge) in developing new products / services.
		<i>use3</i>	Mostly knowledge is used to improve the value to the customer.
3	Learning from Knowledge	<i>learn1</i>	Employees apply the ideas they developed in past work situations to new ones.
		<i>learn2</i>	Lessons learned (success or failure) from work experience are documented to establish (or discard) practice.
		<i>learn3</i>	Our learning process often includes gathering feedback from customers.
		<i>learn4</i>	Employees have some overlapping responsibilities, so that it is easier to learn from one another.
	Contributing Knowledge	<i>contri1</i>	Dedicated roles, such as knowledge manager or coordinator, support the knowledge sharing.
		<i>contri2</i>	Bank acknowledges individual contribution by linking name of the original author to the content (knowledge assets), to publicly recognize.
		<i>contri3</i>	Knowledge seeking behaviour is built into the performance appraisal system.
		<i>contri4</i>	Electronic tools are seamlessly integrated into work activities of people for contributing to the knowledge.
	Assessing Knowledge	<i>asses1</i>	We recognize customer knowledge as major strategic asset.
		<i>asses2</i>	Senior management assess what knowledge needs to be developed.
		<i>asses3</i>	People understand what measures are used to monitor the knowledge and its results.
		<i>asses4</i>	We rely on experts, such as knowledge manager or knowledge coordinator, who has expertise to assess our knowledge (assets) and its results.
		<i>asses5</i>	We have been practicing knowledge management (managing, creating, sharing, measuring knowledge) without calling it that.
6	Building Knowledge	<i>build1</i>	It does not matter which group came up with an idea or technology, everyone collaborates to build it.
		<i>build2</i>	We find ourselves increasingly teaming up with the other organizations to bring new/innovative products to market.
		<i>build3</i>	We have expert(s) appointed to lead our knowledge management effort.
7	Divesting Knowledge	<i>divest1</i>	Our decision to acquire knowledge is based on how much we can leverage it.
		<i>divest2</i>	We evaluate strategic importance of knowledge in financial projections
		<i>divest3</i>	We routinely examine whether we are supporting non-strategic knowledge at the expense of strategically critical knowledge.
		<i>divest4</i>	We outsource skills and expertise that do not support our core competencies.
		<i>divest5</i>	We regularly review our promotion practices to make sure that we are not losing people with strategically important knowledge.

www.IndianJournals.com  
Members Copy-Not for Commercial Sale  
Downloaded From IP - 210.212.129.125 on dated 25-Mar-2013

Accordingly the associated hypotheses to the research question can be stated as:

$H_1$ : Each element of knowledge lifecycle has contribution in developing knowledge in the banks.

$H_2$ : The contribution of each element is equal in developing knowledge for the banks.

The acceptance or rejection of the hypotheses can only be said to be valid for Indian commercial banks and may not hold true for other sectors/ organizations. A qualified sample of 164 respondents was obtained. All respondents were KM professionals but with different functions and roles. 21% in Information Technology role, 37% respondents as Knowledge Managers, and 35% are Group or Function Heads and 17% in KM role reporting to knowledge managers, group heads or other executive levels. The total population size considered for the study was a total of 3 public, 14 Indian-private and 9 foreign-private banks who are implementing knowledge management – fully or partially (like for a specific function/group/activity). The quantity of sample was decided based on data analysis requirements for Confirmatory Factor Analysis (CFA) in Structural Equation Modeling (SEM) using Lisrel software. Use of CFA is justified because research variables are latent in nature. Latent variable means its measurement cannot be done directly but through some indicators. Indicators are observed variables that describe the nature or aspects of the latent variable. In this research, knowledge lifecycle stages (*obtain, use, learn, share, assess, build and divest*) were latent variables whose measurement has been done with the help of observed variables that were 30 knowledge elements grouped under the 7 stages of knowledge lifecycle. Measures of fit taken are Chi-square value, P-value, and Root Mean Square Error of Approximation (RMSEA). Small chi-square corresponds to good fit and a large chi-square to bad fit (Jöreskog and Sörbom, 1989). RMSEA is measure of discrepancy per degree of freedom. RMSEA value of  $\leq 0.05$  indicates a 'close fit', while values up to 0.08 indicate 'reasonable' errors of approximation in the population. But RMSEA value 0 indicates a perfect fit. P-value is another 'measure of fit' this research employs. Value above 0.05 indicates good measure. Perfect measure is obtained when p-value is 1.0000.

## Research Analysis

Model validation of knowledge lifecycle is presented in figure 6. It is clear that P-value is 0.057 which indicates a good 'measure of fit' to the model. RMSEA is 0.03 which is lower than 0.05 also indicates 'close-fit' to the model. It means that the model overall fits well to the data. In other words, all the knowledge elements used on the survey questionnaire are valid elements of knowledge lifecycle because each knowledge element contributes positively to

the development of the knowledge in the banks. What is now to be found out is the contribution of these elements to their respective stage of knowledge lifecycle and rating them based on their strategic value towards developing knowledge in the banks.

As based on P-value (0.05) and RMSEA value (0.03), CFA proves that all manifest variables are valid measurement to the main variable *Knowledge Lifecycle Model*. The path coefficient shows contribution of each manifest variable in developing knowledge management model for banks. For example, *Obtaining Knowledge* is composed of observed variables - *obtain1* (0.45), *obtain2* (0.81), *obtain3* (0.66), *obtain4* (0.51) and *obtain5* (0.16) and the contribution of variable *obtain2* is the highest which represents - *employees routinely document and share information about their expertise*. It means obtaining knowledge in banks depend upon documenting and sharing of staff's expertise with each other. Increasing every one unit of *obtain2* will increase 0.81 units in 'obtaining knowledge' for banks and to contribute more towards developing knowledge. Accordingly, the bank can decide which element to increase, decrease, discard or re-structure and design its knowledge-mix depending upon its KM goals, resources and strategy. This is how strategic worth of knowledge can be measured using a knowledge lifecycle model. Now, if this fact is known to the banks, they would know which knowledge element at what knowledge

**Results provide practical insights for banks implementing KM, to improve their competitiveness through an optimal knowledge-mix design, and serves as start-up point for the banks looking forward to implement KM.**

lifecycle stage contributes highly compared to others in developing their knowledge-base and would be in better position to develop an optimal knowledge-mix. Similarly, the highest contributor in *Using Knowledge* is *use2* (0.85) which is *banks involve customers (knowledge) in developing new products/ services*. In the same way, *learn3* (0.75) contributes highest to *Learning from Knowledge* which confirms banks use of knowledge mostly includes *gathering feedback from customers as part of learning process*. Thus, knowledge use and learning from knowledge greatly involves customers in case of banks. Increment of one unit each will increase the contribution of *Using Knowledge* and *Learning from Knowledge* by 0.85 and 0.75 units respectively. It is also evident that *learn4* contributes to *Divesting Knowledge* as per the path coefficient and therefore, is also the observed variable of *Divesting Knowledge*.

In the same way, the score for *contri4* (1.0) in *Contributing to Knowledge* is the highest. It denotes that *electronic tools are seamlessly integrated into work activities of people for contributing to the knowledge*. This is followed by *contri3* (0.85) that reflects *knowledge seeking behavior is linked to the performance appraisal system* to contribute to the knowledge in banks. For *Assessing Knowledge*, *asses3* (0.93) contributes highest which means *people understand what measures are used to monitor the knowledge and its results*. This is in line

with the point above and supports the argument that the contribution to knowledge majorly takes place when linked to appraisal system. And for that to happen, people must know how their knowledge will be monitored and what results to expect for sharing their knowledge. In *Building Knowledge*, the highest contributor is *build3* (0.89) which confirms that banks have *experts appointed to lead knowledge management effort*. However *build3* (0.73) is the observed variable not just for Building Knowledge but for ‘Contributing to Knowledge’ as well, as the path coefficient shows. In fact similar results are shown by *divest5* as well. It also contributes (0.33) in *Obtaining Knowledge* besides

contributing (0.41) to *Divesting Knowledge*. But *divest3* (1.07) has the highest contribution that defines *banks routinely examine whether they are supporting non-strategic knowledge at the expense of strategically critical knowledge*.

Decision towards the hypothesis can be tested based on p-value from the data analysis of elements of Knowledge Lifecycle which means our first hypothesis - *each element of knowledge lifecycle has contribution in developing knowledge in banks* – stands accepted. But the other hypothesis – *contribution of each element is equal in developing knowledge in banks* – will be rejected.

www.IndianJournals.com  
Members Copy. Not for Commercial Sale  
Downloaded From IP - 210.212.129.125 on dated 25-Mar-2013

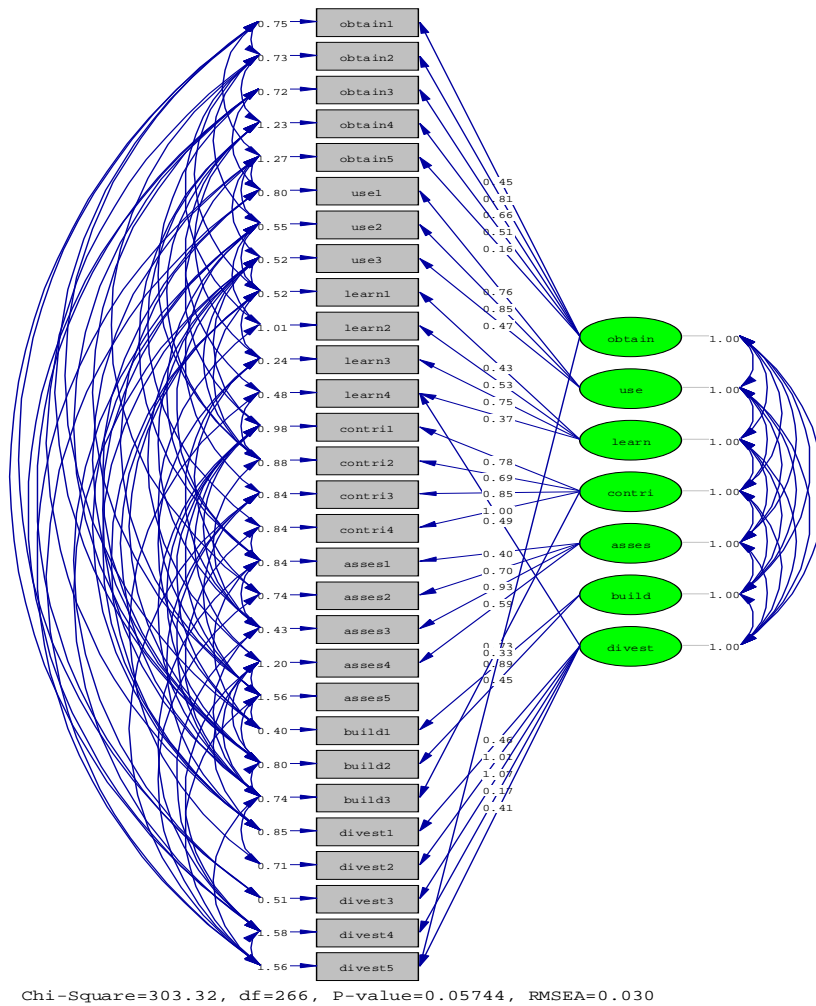


Figure 6: Model Validation for Knowledge Lifecycle

### Concluding Results

Results conclude that staff in the banks obtains knowledge by routinely documenting and sharing their expertise and best part is people know where to look for this information. This reflects that banks have a value system intended to promote knowledge sharing. Alternatively, the banks have also appointed the experts to lead their knowledge management effort and staff can contact these experts for

the information required. But it is widely believed that real experts are always too busy to help. Hence, in such a case it becomes responsibility of the bank staff to take ownership of their own learning and demonstrate it through sharing it which is not really much evident in banks. For this to happen, staff must have appropriate technological skills and sufficient expertise so that staff could identify information by searching for it over a wide variety of

applications and databases. Mostly the use of knowledge involves customers to develop new products and services for them which should rather be focused around improving the value to the customer (and not just introducing the new products or service). In fact, using customer knowledge to develop new product or services can be seen as a subset of customer value. In other words, improving value to customers (high customer value) automatically increases the customer satisfaction that causes increment in the number of products and services. Learning from knowledge in banks often includes gathering feedback from customers but generally do not involve applying the ideas developed in the past to new situations. That means knowledge developed in the past remains un-used which is contrary to the principal of knowledge management that bars organizations from 're-inventing the wheel'. Not applying the practices learned in the past would mean not using the best practices in work routines and more liable to repeat mistakes of the past. Also stocking the information that remains un-used (for long) will be a cost burden and therefore, the assessment of right knowledge makes good

sense not just for the banks but for all. Not all the knowledge can be used and it is therefore banks must first assess their use of knowledge depending upon how much of it can be leveraged by them. But to assess it right, banks must have clear understanding of their knowledge orientation.

Banks have electronic tools integrated seamlessly to their staff work activities that contributes to knowledge. This contribution to knowledge in banks has been linked to performance appraisal system of the staff to inculcate the knowledge sharing behaviour. Like for example, banks measure the increment in the ability of the people to capture, use and share knowledge vertically and horizontally. The staff knows how their contribution will be monitored and what will be its results. Ironically, the banks do not seem to place much emphasis on having written policies and strategies for knowledge sharing. One step in this direction could be measuring the increment in employee satisfaction with KM use. It becomes difficult when staff sees KM as an additional function separate from work.

**Table 5: Rating Strategic Value of Knowledge (Elements) for Banks Using Knowledge Lifecycle Model**

Knowledge Lifecycle Stages	High Strategic Value	Medium Strategic Value	Least Strategic Value
Obtaining Knowledge	Employees routinely document and share information about their expertise.	Information is easy to identify because everyone knows where to look for it.	Employees can quickly contact subject matter experts who play a role in identifying important information and tools for people to work.
Using Knowledge	Involve customer (knowledge) in developing new products/services.	We give all promising ideas thorough consideration, no matter who they come from.	Mostly knowledge is used is to improve the value to the customer.
Learning from Knowledge	Our learning process often includes gathering feedback from customers.	Lessons learned (success or failure) from work experiences are documented to establish (or discard) practice.	People have some overlapping responsibilities, so that it is easier to learn from one another.
Contributing Knowledge	Electronic tools are seamlessly integrated into work activities of people for contributing to the knowledge.	Knowledge seeking (or sharing) behavior is built into the performance appraisal system.	Organization acknowledges individual contribution by linking name of the original author to the content, to publicly recognize.
Assessing Knowledge	People understand what measures are used to monitor the knowledge and its results.	Senior management assesses what knowledge needs to be developed.	We recognize customer knowledge as major strategic asset.
Building Knowledge	We have expert(s) appointed to lead our knowledge management effort.	It does not matter which group came up with an idea or technology, everyone collaborates to build it.	We find ourselves increasingly teaming up with other organizations to bring new/innovative products to market.
Divesting Knowledge	We routinely examine whether we are supporting non-strategic knowledge at the expense of strategically critical knowledge.	We evaluate strategic importance of knowledge in financial projections.	We outsource skills and expertise that do not support our core competencies.

www.IndianJournals.com  
Members Copy, Not for Commercial Sale  
Downloaded From IP - 210.212.129.125 on dated 25-Mar-2013

Based on the information above, a model could be prepared that segregates highest, medium and least contributing knowledge elements under knowledge lifecycle stage. This is presented in *table 5*. These results provide practical insights for banks implementing KM, to improve their competitiveness through an optimal knowledge-mix design, and serves as start-up point for the banks looking forward to implement KM.

## References

Ajmal, Mian, Helo, Petri and Kekale, Tauno (2010) Critical Factors for Knowledge Management in Project Business, *Journal of Knowledge Management*, 14(1), 156-168.

Abou-Zeid, El Sayed (2002) A Knowledge Management Reference Model, *Journal of Knowledge Management*, 6(5), 486-499.

Ali, HafiziMuhamad and Ahmad, Nor Hayati (2006) Knowledge Management in Malaysian Banks: A New Paradigm, *Journal of Knowledge Management Practice*, 7(3) accessed online <http://www.tlinc.com/artic120.htm> on May 5, 2011.

Ambos, Tina C. and Schlegelmilch, Bodo B. (2009) Managing Knowledge in International Consulting Firms, *Journal of Knowledge Management*, 13(6), 491-508.

Assudani, Rashmi H. (2009) Dispersed Knowledge Work – Implications for Knowledge Intensive Firms, *Journal of Knowledge Management*, 13(6), 521-532.

Baah, Samir (2008) Managing Knowledge in Banks: An Inspection Based Experience, Cab Calling, October-December, 30-33.

Becker, C. (2002) Education and Mind in the Knowledge Age, London: Erlbaum.

Binkinshaw, J. and Sheehan, T. (2002) Managing the Knowledge Life Cycle, *MIT Sloan Management Review (Fall)*, 75-83.

Bhatt, Ganesh (2000) Organizing Knowledge in the Knowledge Development Cycle, *Journal of Knowledge Management*, 4(1), 15-26.

Böllinger, Audrey S. and Smith, Robert D. (2001) Managing Organizational Knowledge as a Strategic Asset, *Journal of Knowledge Management*, 5(1), 8-18.

Bukowitz, Wendi R. and Williams, Ruth L. (1999) The Knowledge Management Field book, Financial Times Prentice Hall, London.

Carlile, P. R. and Rebentisch, E. S. (2003) Into the Black Box: The Knowledge Transformation Cycle, *Management Science*, 49(9), 1180-1195.

Carrillo, Francisco Javier (2009) Demarcation and Levels of Analysis in Knowledge Based Development, *Journal of Knowledge Management*, 13(5), 208-213.

Chandra, Ashoka and Khanijo, M.K. (2011) Knowledge Economy: The Indian Challenge, Third Printing, Sage Publications, New Delhi.

Chattopadhyay, Arundhati, Krishnan, G.S. and Singh, U.S. (2011) International Networking for Knowledge Management, In: Chandra, Ashoka and Khanijo, M.K. (Eds.), Knowledge Economy: The Indian Challenge, Third Printing, Sage Publications, New Delhi.

Chua, Alton and Lam, Wing (2005) Why KM Projects Fail: A Multi Case Analysis, *Journal of Knowledge Management*, 9(3), 6-17.

Curado, Carla (2008) Perceptions of Knowledge Management and Intellectual Capital in the Banking Industry, *Journal of Knowledge Management*, 12(3), 141-155.

Davenport, Thomas, Long, David De and Beers (1998) Successful Knowledge Management Projects, *Sloan Management Review (Winter)*, 43-56.

Despres, Charles and Chauvel, Daniele (1999) Knowledge Management(s), *Journal of Knowledge Management*, 3(2), 110-120.

Dunford, Richard (2000) Key Challenges in the Search for the Effective Management of Knowledge in Management Consulting Firms, *Journal of Knowledge Management*, 4(4), 295-302.

Dutt, Himanshu, Jha, VidhuShekhar and Qamar, Furqan, (2010) Critical Analysis of Knowledge Constituents and Impact on Organizational Knowledge Orientation - An Exploratory Study, *IIMS Journal of Management Science*, 1(2), 93-105.

Eppler, Martin A. and Burkhard, Remo A. (2007) Visual Representations in Knowledge Management: Framework and Cases, *Journal of Knowledge Management*, 11(4), 112-122.

Gourlay, S. N. and Nurse, A. (2005) Flaws in the “Engine” of Knowledge Creation: A Critique of Nonaka’s SECI Model, Chapter 13 in Challenges and Issues in Knowledge Management, Buono, A. F., and Pouffelt, F. (Eds.) Research in Management Consulting Series, Volume 5, Greenwich, Connecticut: Information Age Publishing, pp. 293-315 accessed online <http://myweb.tiscali.co.uk/sngourlay/PDFs/Chap%2013%20GourlayNurse.pdf> on May 16, 2012.

Goyal, O.P. (2007) Knowledge Management: Analysis and Design for Indian Commercial Banking System, Kalpaz Publications, India.

Guns, Bob (1998) The Chief Knowledge Officer’s Role: Challenges and Competencies, *Journal of Knowledge Management*, 1(4), 315-319.

Hatten, K. J. and Rosenthal, S. R. (2002) Knowledge Management: Creating a Knowledge Culture, *Ivey Business Journal*, September-October, 1-5.

Hult, G. and Thomas M. (2003) An Integration of Thoughts on Knowledge Management, *Decision Sciences*, 34(2), 189-195.

Hussi, Tomi (2004) Reconfiguring Knowledge Management – Combining Intellectual Capital, Intangible Assets and Knowledge Creation, *Journal of Knowledge Management*, 8(2), 36-52.

Jasimuddin, Sajjad M. (2008) A Holistic View of Knowledge Management Strategy, *Journal of Knowledge Management*, 12(2), 57-66.

Jöreskog, K.G. and Sörbom D. (1989) LISREL 7-AGuide to the Program and Application, SPSS Publication, Chicago.

Junnarker, Bipin and Brown, Carol V. (1997) Re-assessing the Enabling Role of Information Technology in KM, *Journal of Knowledge Management*, 1(2), 142-148.

King, W. R.; Marks, P. V. and McCoy, S. (2002) The Most Important Issues in Knowledge Management, *Communications of the ACM*, September, 45(9), 93-97.

Kumar, Vinod; Sinval, Harsha and Nangia, Vinay K. (2011) Mapping the Directions of Transition from Industrial Economy to Knowledge Economy, In Chandra, Ashoka and Khanijo, M.K. (Eds.), Knowledge Economy: the Indian Challenge, Third Printing, Sage Publications, New Delhi.

Liebowitz, J. (2004) A Knowledge Management Strategy for the Jason Organization: A Case Study, *Journal of Computer Information Systems (Winter)*, 1-5.

Lam, Alice and Lambermont-Ford, Jean-Paul (2010) Knowledge Sharing in Organizational Contexts: A Motivation-based Perspective, *Journal of Knowledge Management*, 14(1), 51-66.

Lang, Josephine Chinying (2001), Managerial Concerns in Knowledge Management, *Journal of Knowledge Management*, 5(1), 43-57.

Levy, Meira; Hadar, Irit; Greenspan, Steven and Hadar, Ethan (2010) Uncovering Cultural Perceptions and Barriers during Knowledge Audit, *Journal of Knowledge Management*, 14(1), 114-127.

- Long, L. D. and Seemann, P. (2000) Confronting Conceptual Confusion and Conflict in Knowledge Management, *Organizational Dynamics*, 29(1), 33-44.
- Madhvan, R. and Grover, R. (1998) From Embedded Knowledge to Embodied Knowledge: New Product Development as Knowledge Management, *Journal of Marketing*, 62 (October), 1-12.
- Mahesh, Kavi and Suresh, J.K (2009), Knowledge Criteria for Organization Design, *Journal of Knowledge Management*, 13(4), 41-51.
- Metaxiotis, Kostas; Ergazakis, Kostas and Psarras, John (2005) Exploring the World of Knowledge Management: Agreements and Disagreements In the Academic/Practitioner Community, *Journal of Knowledge Management*, 9(2), 6-18.
- Mitchell, Rebecca and Boyle, Brendan (2010) Knowledge Creation Measurement Methods, *Journal of Knowledge Management*, 14(2), 67-82.
- Mohan, K.; George, Babu P. and Nedelea, Alexandru (2006) A Study of E-enabled Knowledge Management in Selected Indian Banks, *The Annals of the Stefan cel Marie*, 1(1), 42-53.
- Murray, P. (2002) Knowledge Management as a Sustained Competitive Advantage, *Ivey Business Journal*, March-April, 71-76.
- Nonaka, Ikujiro and Takeuchi, Hirotaka (1995) *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, USA.
- OECD Knowledge Management Project accessed online from [http://www.oecd.org/document/16/0,3746,en\\_2649\\_39263294\\_2756624\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/16/0,3746,en_2649_39263294_2756624_1_1_1_1,00.html) on 14, April, 2007.
- Ofek, E. and Sarvary, M. (2001) Leveraging the Customer Base: Creating Competitive Advantage through Knowledge Management, *Management Science*, 47(11), 1441-1456.
- Prakash, Ravi (2011) Knowledge Management in Manufacturing Organization, In Chandra, Ashoka and Khanijo, M.K. (Eds.), *Knowledge Economy: The Indian Challenge*, Third Printing, New Sage Publications, Delhi.
- Quinn, J.B. (1992), *Intelligent Enterprise*, Free Press, New York.
- Riege, A. (2005) Three Dozen Knowledge Sharing Barriers Managers Must Consider, *Journal of Knowledge Management*, 9(3), 18-35.
- Salisbury and Plass (2001) A Conceptual Framework for Knowledge Management System, *Human Resource Development International*, 4, 451-464.
- Salisbury, Mark W. (2003) Putting Theory Into Practice to Build Knowledge Management Systems, *Journal of Knowledge Management*, 7(2), 128-141.
- Sankaran, K. (2011) Sensitivity to Self-Organization and Effectiveness of IT Networks in the Social Sector, In Chandra, Ashoka and Khanijo, M.K. (Eds.), *Knowledge Economy: The Indian Challenge*, Third Printing, Sage Publications, New Delhi.
- Senge, Peter (1990) *The Leader's New Work: Building Learning Organizations*, *Sloan Management Review*, 32, 7-23.
- Sharma, N.L and Goswami, Susobhan (2009) The Nuances of Knowledge Creation and Development in Indian Pharmaceutical Industry, *Journal of Knowledge Management*, 13(5), 319-330.
- Sharp, Peter (2006) MaKE: A Knowledge Management Method, *Journal of Knowledge Management*, 10(6), 100-109.
- Singh, Sanjay Kumar (2008) Role of Leadership in Knowledge Management: A study, *Journal of Knowledge Management*, 12(4), 3-15.
- Sussman, S. W. and Seigal, W. S. (2003) Informational Influence in Organizations: An Integrated Approach to Knowledge Adoption, *Information Systems Research*, 14(1), 47-65.
- Ulrich, D. (1998) Intellectual Capital = Competence x Commitment, *Sloan Management Review* (Winter), 15-26.
- Vorakulpipat, Chalee and Rezgui, Yacine (2008) An Evolutionary and Interpretative Perspective to Knowledge Management, *Journal of Knowledge Management*, 12(3), 17-34.
- Wiig, Karl M. (1999) What Future Knowledge Management Users May Expect, *Journal of Knowledge Management*, 3(2), 155-165.
- Zack, M. H. (2003) Rethinking the Knowledge-Based Organization, *MIT Sloan Management Review* (Summer), 67-71.



**Himanshu Dutt** is pursuing Doctoral Research (thesis submitted) in Management from Centre for Management Studies, Jamia Millia Islamia, New Delhi and presently working as Sr. Manager Marketing & Strategy with Bajaj Capital Ltd. He has been a marketing professional with active interest in the area of Knowledge Management, Business Analytics & various functional areas of Strategic Marketing for now over 8 years. He has served as Faculty in Management, teaching various courses in marketing, and possess 4 years of experience in academia. He has published research papers in reputed national and international journals. He can be contacted at [himanshudutt@gmail.com](mailto:himanshudutt@gmail.com).



PhD from the University of Lucknow, **Prof. Furqan Qamar** holds his substantive teaching position as Professor of Management at Jamia Millia Islamia, New Delhi and has taught/lectured at institutions of repute in India and abroad. He served as Adviser (Education) in Planning Commission, Government of India and as Vice Chancellor, University of Rajasthan at Jaipur. Presently he is Vice Chancellor of the Central University of Himachal Pradesh, one of the 15 new central universities established by Government of India. Professor Qamar is recognized for his contribution in the area of educational management. His research and publications largely focus in the area of educational management, financing, resource-use efficiency and quality assurance in education. As member/expert of numerous MHRD/UGC Committees/expert group, he has been actively engaged in educational planning & administration of the country since mid eighties. He can be reached at [furqan.jmi@gmail.com](mailto:furqan.jmi@gmail.com).



**Vidhu Shekhar Jha** is currently a Professor of Strategic Management at Lal Bahadur Shastri Institute of Management, New Delhi, India. He has Ph.D. in the Area Business Excellence Strategy Implementation, from Mangalore University, India. He did his M.S. in Industrial Engineering & Packaging Engineering from Rutgers State University, USA. He has Bachelors in Mechanical Engineering from Kashmir University, India. He has about 17 Years of Corporate Experience in different Companies in India and USA, including more than 11 years at Tata Steel Jamshedpur, India. He has had been in Academia for the last 12 years or so and has worked with premier B-Schools like TAPMI, Manipal, MDI Gurgaon, IMI, New Delhi, Goa Institute of Management and G D Goenka World Institute, in India and KIMEP, Almaty, Kazakhstan. He has several International Publication in peer-reviewed Journals and National Publications in his wide Areas of interest. He can be reached at [vidhushekhari@gmail.com](mailto:vidhushekhari@gmail.com).