

PalArch's Journal of Archaeology
of Egypt / Egyptology

**PRACTICAL APPLICATION OF KNOWLEDGE MANAGEMENT MODELS:
ASSESSING EXISTING KM MODELS FROM THE PERSPECTIVE OF
PRIVATE HOSPITALS OF NORTH EAST INDIA**

Pradyut Kumar Borah¹, Dr. Biswa Ranjan Phukan², Dr. Sanjib Raj³

¹Research Scholar, Assam Science and Technology University

²Academic Registrar, Assam Science and Technology University

³Assistant Professor (Sr. Grade) Assam Institute of Management

Pradyut Kumar Borah¹, Dr. Biswa Ranjan Phukan², Dr. Sanjib Raj³, PRACTICAL APPLICATION OF KNOWLEDGE MANAGEMENT MODELS: ASSESSING EXISTING KM MODELS FROM THE PERSPECTIVE OF PRIVATE HOSPITALS OF NORTH EAST INDIA,-- PalArch's Journal Of Archaeology Of Egypt/Egyptology 18(10), 818-834. ISSN 1567-214x

Key Words: Knowledge, KM Models, healthcare, training, strategy.

ABSTRACT

With the growing importance attached to knowledge management (KM), researches on various KM implementation options have come up which resulted in enunciation of several models and frameworks for KM. These are considered from the practical perspectives underlying the need for some organising principles forming a general framework which identifies and categorise different activities in KM process. The Models in KM shows a process that helps organizations to use a more collective and systematic process of data mining, data capture, storage, refinement, codification, utilization, updation and utilization to enhance organizational effectiveness. This research endeavours to look into practical application of the KM models and how far these are being applied. The objective of the research is to look into the practical application of knowledge management models from the perspective of private hospitals in Northeast India. The objective is to see how the different KM models can be applied in the sector for performance enhancement and how these models fit in to the actual practices required in the hospitals For this the KM process in the hospitals have been studied through a primary survey and attempt was made to relate these activities to the components of the KM models considered for this research. As far as the practical application of KM models is concerned, adoption of particular model is not noticed though various components of the models under study are being practiced. It is seen that components of each of the models are significant for the healthcare sector, however a single model is not being practically applied and activities that conforms to all the models under study are being practiced. It is envisaged that the findings would give an insight into the practical applications of KM models from the perspective of

the healthcare sector.

1. Introduction

A structured Knowledge Management system has been recognised as a major strength of any organisation not only to manage information pertaining to the organisation but also to serve as a source of learning for organisational performance through interactions and sharing. Knowledge management is the process and collection of activities by data integration and sharing of information and experience for disseminating the accurate knowledge inputs to right people at the correct time for better application and utilisation,

With growing importance attached to knowledge management, studies and researches on various KM implementation options too have come up which resulted in enunciation of several models for KM. These are considered from the practical perspectives underlying the need for some organising principles forming a general framework which identifies and categorise different activities in KM process.

Knowledge Management Models (KMMs) can be defined as combination of data or information into a format that can be reused and replicated for the purpose of capturing, storing, improving, sharing, collating and processes the same to stimulate intelligence. These are used for the organizations to collect, store and analyze knowledge to have an advantage over their competitors. KM models can be regarded integral parts of organizations which tries to set up KM systems

Several Models of KM has been postulated which signifies the researches being taken up in the subject to come out with an applicable KM process for the organisations. The Models in KM shows a process that helps organizations to use a more collective and systematic process of data mining, data capture, storage, refinement, codification, utilization, updation and utilization to enhance organizational effectiveness.

This research is an attempt to look into the practical application of the KM models and how far these are being practically applied. For the same, the research made an attempt to look into the practical application of the KM models in the private hospitals of Northeast India. It will try to make a qualitative study of the process of knowledge management in the private hospitals and how far these are in conformity with the KM models considered in this research.

2. Research Objective:

The objective of the research is to look into the practical application of knowledge management models in private hospitals of North East India and how far these are being used in practical field. The objective is to see how the different KM models can be applied in the sector for performance enhancement and how these models fit in to the actual practices required in the hospitals. The other objectives that the research attempts to fulfill are:

- a) To assess the practical application of KM Models in the private hospitals and the different aspects of these models that are being practiced.
- b) To understand a proper framework required in the healthcare sector and how best the models can be integrated depending on the activities in the sector
- c) To look into the various activities in light of the KM Models and assess the usefulness and practical applicability of these models in the sector under study

3. Literature Review:

A review of literature pertaining to knowledge management aspects more particularly in the healthcare sector was made to have an understanding of the different aspects of KM. Further the KM models enunciated by various researchers were studied.

Thomas H. Davenport and Lawrence Prusak (1998) have said that knowledge cannot be defined either as data or as information. Mcdermott (1999) has stipulated what differentiate knowledge from these two. According to him six character of knowledge make it different from information: knowing is a human act, knowledge is the residue of thinking, knowledge is created in present moment, knowledge belongs to communities, knowledge circulates through communities in many ways, and new knowledge is creates at the boundaries of old.

The need of KM is appreciated by the World Bodies too. In its Annual Report to Economic and social Council, UNCEF has emphasized the promotion and exchange of learning and the sharing of knowledge, including the dissemination of lessons learned and good practices. Emphasizing the need of KM, World Health Organization (WHO) has defined Knowledge Management as principles, tools and practices that help people to create knowledge, and to share, translate and apply to improve effectiveness and to create value.

According to Driver, M. (2001), it is important to use KM to ensure knowledge creation and transfer, need of knowledge, roles of health professional, knowledge organization, and encourage knowledge sharing behavior. The infrastructure for KM and the structured process has a bearing on KM and its success. Emphasising this B. Ghosh and J. E. Scot stated that the impact on both organizational level and patient care benefits is a measure of effectiveness of KM systems in healthcare delivery, which again is dependent on the levels of infrastructure of KM (structure, technology) and the process of KM adopted.

Oluwole Adekanmbi and Paul Green confirm that the success of a healthcare system is dependent on the collection and analysis of data, exchange of billing, clinical information, and information utilization. Bosua, R. and Scheepers, R (2007) said that transfer of environmental knowledge occurs through observation, listening, queries, idea sharing, recommendation, guideline identification and adapting behavioral patterns in the healthcare sector.

A study by Finkelstein et al focused on the impact of health IT application on improving shared decision making. Aids for clinical decision, tele-monitoring system level of satisfaction with decisions, are the key components for effective KM. It also emphasized the application of IT to improve communication with patients as well to enhance knowledge level of patients. It is agreed that technology can improve effective retrieval of knowledge..

Citing the importance of KM in healthcare as in any other business or even more Kothari A, et al (2011) said that “some of the reasons for KM use in healthcare, like in business sector, include prevention of possible knowledge loss due to retirement and staff turnover; gaining competitive advantage; continuous learning; prevention of knowledge diffusion and/or isolation of organization or department or individuals and the need of fulfilling users needs

To help KM in the healthcare sector Nations Population Fund (UNFPA), has developed ‘knowledge assets development system ‘(KADS), which is a pilot project that UNFPA experimented on knowledge transfer and capture is a good strategy to be adopted. Deve T, Hapanyengwi G. (2014) said that “Technology plays a pivotal role

in KM in facilitating knowledge flow through its life cycle and is realized by the implementation of knowledge management system (KMS) because it provides a technical foundation that facilitates KMS implementation

To understand the users of KM in healthcare Hwang, Chang, Chen and Wu (2008) carried out a survey study on the users of KMS in the hospital in Taiwan to assess the perceived value of KMS. The study revealed that, users of KMS were found to be voluntary physicians from different departments. Bali & Dwivedi, (2007) in their research noted that even though application of KM can lead to tremendous impact, the complexity of the health care sector presents a special challenge for the adoption

To prove the interconnection nature of healthcare, Hameed, (2010) took out a research and found that “health sector is very much interconnected and interrelated so a successful initiative in one department can be easily extended to practice in other departments.” Nor’ashikin Al (2009) in her Article “Effective Knowledge Management Model (KM) for Healthcare Integrating Success Factors and Knowledge Management Strategy” in Asian Hospital and Healthcare Management presented an Integrated KM Model for Healthcare

Prantik Bordoloi and Nazrul Islam (2012) conducting a research on public hospital in Thailand found that physicians and other professionals emphasized on storage of accurate and complete patient information for improvement of service delivery. Further the study states adoption of KM practices is dependent on leadership, IT infrastructure and conducive HR policies and the health administrators need to appreciate this.

Rajbir Singh et al. (2016) carrying out a research on Knowledge Management Practices in Indian Healthcare Sector stated that doctors are not strongly inclined to use of IT tools even though they are well informed in acquisition of knowledge through participation in conference, discussion groups, health reports etc. It can be said that there will be a demand for intranet in hospitals and extranet in general for healthcare sector through which doctors can acquire new knowledge.

As regards KM Models several models have been postulated and these are considered from the practical perspectives underlying the need for some organising principles forming a general framework which identifies and categorise different activities in KM process. Some of the Models and their thrust areas are summarized below:

Table: 1

KM Models	Major Components
WIIG Knowledge Management Model (1993)	KM cycle comprises four stages namely, a) Knowledge building, b) Knowledge holding c) Knowledge Pooling d) Knowledge use.
SECI Model of Ikujiro Nonaka and Hirotaka Takeuchi (1995)	Emphasis on four processes as a) Socialisation, b) Externiliation, c) Combination d) Internalisation
Johari Window Model of Joseph Luft and Harry Ingham (1995)	Represented in a 2 by 2 matrix form. This model employs the interactions between

	two sources of information, the Self and the others
Von Krogh and Roos Model (1995)	It differentiates between individual and social knowledge
Kogut and Zander's KMM (1996)	Emphasis on structuring knowledge for discourse and coordination among individuals with varied expertise and replicating it
The Choo Sense-Making KM Model (1998)	Emphasises on three components in the KM process.viz. <ul style="list-style-type: none"> a) sense making, b) knowledge creation and c) decision making
The Boisot KM Model (1998)	Social Learning Cycle (SLC) that adopts the I-Space to model the dynamic flow of knowledge through a series of six phases as <ul style="list-style-type: none"> a) Scanning, b) Problem-Solving , c) Abstraction d) Diffusion e) Absorption f) Impacting
Bridging Epistemologies Model of S.D.N Cook and J.S.Brown (1999)	This model stands on four pillars viz: <ul style="list-style-type: none"> a) Concepts: Knowing and understanding of the activity b) Stories: Past records of how things are to be done c) Skills: Ability to execute the task d) Genre: The context under which a task is to be performed
Capability Maturity Model by Frid (2003)	A 5 Level Model with levels signifying the processes in an organization <ul style="list-style-type: none"> a) Initial/Adhoc, b) Repeatable c) Defined d) Managed e) Optimising
The 7-Circle KMM of Ologbo and Nor (2015)	Emphasis on seven Circles as <ul style="list-style-type: none"> a) Initiative/Strategy b) Recognition c) Choosing KM People, d) Adoption of KM Mechanism, e) Choosing Right Technology, f) Coordination for Interaction and g) Motivation System for successful KM Process

The Models thus evolved over the years with addition of different levels and process

which again is the result of the application of KM in diverse sectors

4. Methodology

For the research a method of studying some of the KM Models and relating the components of these Models with actual practice in organisation is being taken up to understand the applicability and practice. The private hospitals of northeast India was considered for the research and a method of understanding the KM process of the hospitals has been adopted. The research is essentially based on both primary and secondary data. To understand the KM activities of the healthcare sector a structured questionnaire was designed and used for data collection from the hospitals. The respondents were professionals, management and other employees of hospitals and their perceptions formed basis for further analysis and interpretation. These then were studied in relation with KM models to understand how practically the models are being applied in the sector under study.

- a) The first step in the research is to understand the KM process in the sector under study for which the focus was understand the activities being taken up for managing knowledge and how structured these activities are. The responses elicited based on pre defined parameters which have been decided upon based on preliminary research pertaining to the sector and the KM models. The variables have been based on peer group discussions and review of literature from which the variables have been derived.
- b) The second step in the research is to fit in the activities taken up by the healthcare sector as a part of KM with the KM models considered for this research. For this research five (5) KM models have been considered and these are as given

Table: 2

KM Models	Components of Model	Conforming Activities considered
WIIG Knowledge Management Model (1993)	KM cycle comprises a) Knowledge building, b) knowledge holding c) Knowledge Pooling d) Knowledge using	<ul style="list-style-type: none"> ▪ Identification & capture of information ▪ Collation of knowledge as per organizational requirement ▪ Knowledge storage system ▪ Retention of employees ▪ Develop a Internal process of learning ▪ Hiring of experienced manpower ▪ Improving knowledge base ▪ Building information repository ▪ Strategic partnership for learning
SECI Model of Ikujiro Nonaka and Hirotaka Takeuchi (1995)	Emphasis on four processes a) Socialisation, b) Externilisation,	<ul style="list-style-type: none"> ▪ Exit Interviews and Retiree Programme to retain

	<p>c) Combination d) Internalisation</p>	<p>information and expert knowledge</p> <ul style="list-style-type: none"> ▪ Inter Department meetings ▪ Documentation of functional norms to replicate ▪ Maintaining case study records of special cases handled ▪ Dedicated team for record keeping and documentation ▪ Documentation of functional norms to replicate ▪ Library facilities for employees and doctors ▪ Capacity building of employee ▪ Maintain information repository
Von Krogh and Roos Model (1995)	Differentiates between individual and social knowledge	<ul style="list-style-type: none"> ▪ Sharing best practices ▪ Subscription to medical journals etc ▪ Membership of professional organizations/ technical collaboration ▪ Tie up with specialists of other hospitals ▪ Mentoring by team leader ▪ Training programmes & meetings
Kogut and Zander's KMM (1996)	Structuring knowledge for discourse and coordination among individuals with varied expertise and replicating it	<ul style="list-style-type: none"> ▪ Capacity building of employee ▪ Training programmes & meetings ▪ Sharing best practices ▪ Staff attraction/retention ▪ Hiring of experienced manpower ▪ Improving knowledge base ▪ Building information repository
The 7-Circle KMM of Ologbo and Nor (2015)	<p>Emphasis on seven Circles as</p> <p>a) Initiative/Strategy b) Recognition c) Choosing KM People, d) Adoption of Mechanism, e) Right Technology,</p>	<ul style="list-style-type: none"> ▪ Introduction of new technologies and equipment ▪ Strategic partnership for learning ▪ Anticipating requirement in technology ▪ Rewards and incentives

	f) Coordination Interaction g) Motivation System	for <ul style="list-style-type: none"> ▪ Hiring of experienced manpower ▪ Dedicated team for record keeping and documentation ▪ CME of Doctors ▪ Inter departmental meetings ▪ Sharing best practices ▪ Staff attraction/retention ▪ Mentoring by team leader ▪ Access to IT as intranet and internet for information gathering ▪ Clinical decision aids supported by technology
--	---	---

The research is a qualitative and explorative analysis and the responses elicited from primary survey were generally analysed by method of weighted average to have an understanding KM activities being taken up. In addition to this a method of relating the activities with the components of the KM models under study formed a part of the research.

5. Results and Discussion

This research basically made an attempt to look into the practical applications of KM Models from the perspective of the healthcare sector. For analysis the specific aspects of KM process adopted has been studied and these are related to KM models. The research was to identify the focal point of emphasis by the healthcare sector and how these activities conform to the models under study. The analysis has been done basically to highlight the following:

- Assess the activities taken up by the organisation for KM and the importance attached to these
- Process adopted for capturing knowledge for subsequent storage and application
- Analyse the conformity of these activities to the components of various KM models to understand the practical application of these models

It can be said that for adoption of a structured KM process it is important that organisation identify the key objective they try to achieve for KM. Healthcare is one of the prominent sectors which demand a systemized knowledge management process and in fact it is more relevant in this sector owing to the constant need to update on the latest development in R&D in healthcare as well as to enhance the skills of the employees to provide the best possible services. Improving the services level with infusion of modern technology and service procedure is crucial for the healthcare sector, for which a proper documentation, sourcing information is required.

To make an assessment of practical application of KM models by the healthcare sector, the research looked into the various activities being taken up as a part of KM strategy. WIIG Knowledge Management Model (1993) empahsises on building, holding and pooling knowledge while 7-Circle KMM of Ologbo and Nor (2015) lays emphasis on initiative, strategy and choosing KM people and adoption of mechanism while looking into the process of knowledge creation and storage the study shows the

following based on emphasis as accorded by the sector:

Table: 3

Practices	Mean	SD.	Variance	Rank
Maintaining employee manuals	2.68	.539	.264	5
Maintaining case study records of special cases handled	2.89	.467	.234	4
Application of customized software for patients' records	2.44	.531	.243	6
Library facilities for employees and doctors	1.247	.423	.149	7
Dedicated team for record keeping and documentation	0.639	.272	.067	8
Subscription to medical journals etc	3.04	.573	.241	3
Membership of professional organizations for collaboration	3.19	.424	.273	2
Tie up with specialists of other hospitals	3.28	.561	.264	1

From the analysis it is seen that, tie up with specialists of other hospitals (Mean 3.28 and SD .561) and Membership of professional organizations/ technical (Mean 3.19 and SD .424) are the important activities taken up for knowledge acquisition. Thus building knowledge with tie ups and pooling knowledge is found to be practiced, while a mechanism for KM is found to be present in varying degrees. The concept of internalization of social knowledge as advocated by Von Krogh and Roos Model (1995) is found to be present with subscription to medical journal and membership of professional organizations being emphasized upon by the hospitals

As regards the process adopted for retaining and creating knowledge, almost all respondents said that training is the major process adopted, to be followed access to internet and rotational assignments. It seems that capturing of Tacit Knowledge is low in the hospitals (Mean 2.59 and SD .526) as only 16.67% of the hospitals said that a process of exit interview is followed. This is what has been advocated by SECI Model of Ikujiro Nonaka and Hirotaka Takeuchi (1995). There is thus a need for capturing tacit knowledge by the hospitals so that specialized knowledge can be captured and reused. The findings are as presented below:

Table: 4

Activities taken up	Mean	Std. Dev	Variance	Rank
Training programmes & meetings	3.43	.581	.283	1
Mentoring by team leader	2.57	.432	.278	6
Maintaining employee manuals specifying job responsibilities	2.23	.516	.287	7
Rotational assignment of employees	2.86	.537	.263	3
Documentation of functional norms to replicate	2.46	.438	.298	8

Access to IT as intranet and internet for information gathering	2.98	.547	.268	2
Inter Department meetings	2.63	.453	.233	4
Exit Interviews and Retiree Programme to retain information and expert knowledge	2.59	.526	.237	5

Kogut and Zander’s KMM (1996) emphasizes on knowledge dissemination through discourses and coordination among individuals while Von Krogh and Roos Model focuses on sharing of information as they differentiate between individual and social knowledge. The research looked into the various processes being adopted and the findings are as presented below.

Table: 5

Activities	Mean	SD	Variance	Rank
Training of Nurses and Paramedics	3.19	.424	.273	2
Capacity building of employee	3.04	.573	.241	3
CME of Doctors	3.28	.561	.264	1
Building information repository	2.68	.539	.264	5
Research and Development	2.44	.531	.243	6
Patients data bank and Client service	2..89	.467	.234	4

It was found that CME of doctors is given maximum importance to keep the services updated (Mean 3.28 and SD .561) to be followed by training of nurses and paramedics (Mean 3.19 and SD .424). There is a process of capacity building of other employees through internal training programme for augmenting the quality of services. Thus this conforms to the Kogut and Zander’s KMM and also with WIIG Knowledge Management Model and 7-Circle KMM of Ologbo and Nor where capacity building and pooling knowledge is being emphasized upon

It is important that the right technology is adopted for knowledge management and all the models focus on a proper process of KM which includes the use of the right technology and mechanism. When looked into the status of adoption of technology, the analysis shows the following:

Table: 6

Activities	Mean	SD	Variance	Rank
Use of technology for improving shared decision making	3.16	.517	.269	1
Clinical decision aids supported by technology	2.83	.446	.249	2
Tele-monitoring system for measuring outcomes	2.57	.526	.217	4

Technology as a tool for patient communication	2.59	.543	.278	3
Technology for effective retrieval of knowledge	2.43	.537	.279	5
Information management to sharing of experience	2.33	.416	.241	6

It was found that technology usage is there and more specifically in clinical decision making which is requirement of the healthcare sector. Use of technology for improving shared decision making (Mean 3.16 and SD .517) and Clinical decision aids supported by technology (Mean 2.82 and SD .446) are the basic areas where technology is used in the maximum.

It is important that the knowledge of the organisation is properly stored so that application becomes easier. The research attempted to look into the process of knowledge storage and dissemination and the findings are as tabulated.

Table: 7

KM initiatives	Mean	SD	Variance	Rank
Systematic Documentation of data	3.04	.538	.433	2
Record keeping	3.28	.457	.264	1
Access to internet	2.42	.623	.283	6
Collaborative working culture	2.89	.643	.291	3
Periodic Training & Review	2.64	.524	.673	5
Rewards and Incentives	2.84	.782	.264	4

Pooling of knowledge as envisaged by the KM Models are found to be in practice in the hospitals covered, Activities as record keeping (Mean 3.28 and SD .457) and systematic documentation of data (Mean 3.04 and SD .538) is being emphasized upon by the surveyed hospitals.

- There is systematic documentation of data as regards patient information and also record keeping relating to patients treatment history which can be beneficial for reference
- The hospitals have a collaborative working culture and exchange of ideas takes place periodically
- The nurses and paramedics are provided training in house on a regular basis to enhance performance level in majority of the hospitals

Next comes the need for conversion of individual knowledge to organisational knowledge and how it is being done in the sector. SECI Model of Ikujiro Nonaka and Hirotaka Takeuchi lays emphasis on socialization and internalization where social knowledge is being imbibed into the organisational culture. Similarly Von Krogh and Roos Model focuses on sharing of individual knowledge as KM strategy while Kogut and Zander’s KMM and 7-Circle KMM of Ologbo and Nor calls for coordination and interaction. The research looked into these aspects and the following is revealed.

Table: 8

Problems	Mean	SD	Variance	Rank
People willingly share their knowledge & experience	3.04	.538	.433	2
Employees Performance enhancement with in-house training	3.28	.457	.264	1
Organisation works for competitive advantage	2.42	.623	.283	4
Speciality services are regularly upgraded	2.89	.643	.291	3
Tie ups collaboration with national/international players	2.36	.459	.285	

The hospitals are found to be having a supportive culture for exchange of ideas and sharing of information. In house training and inter departmental meetings are being held periodically in majority of the hospitals. Considering the competition in the market the hospitals constantly work for competitive advantage by betterment of service quality for which KM is pivotal

Further the 7-Circle KMM of Ologbo and Nor and WIIG Knowledge Management Model focus on strategy for knowledge building and management and the research looked into some of these aspects in the healthcare sector. It is seen that a strategy of improving infrastructure is being taken up for better services as well as knowledge development. As regards the strategy for KM, the study reveals the following:

Table: 9

Practices	Mean	SD	Variance	Rank
Improvement of infrastructure facilities	3.04	.538	.433	2
Introduction of new technologies and equipment	3.28	.457	.264	1
Improving the skill of employees	2.42	.623	.283	6
Hiring of experienced manpower	2.89	.643	.291	3
Strategic partnership for learning	2.39	.541	.284	

It is seen that majority of the hospitals with multi speciality and super speciality services are concentrating on improvement of infrastructure facilities. The strategy as evident is to new technologies and equipment (Mean 3.28 SD .457 and Improvement of infrastructure facilities (Mean 3.04 and SD .538). Further it can be said that internalisation of knowledge and information sharing as advocated by SECI Model, Kogut and Zander’s KMM and Von Krogh and Roos Model is being applied by hiring experienced manpower and strategic partnership for learning in varying degrees

The research shows that the KM models are being applied by the healthcare sector and even though the KM practiced are not being guided fully by the KM models activities akin to the models are being practiced showing the practical applicability of these models. From the analysis of data the following practical application of the KM models can be inferred.

KM Models	Practical Application in Healthcare																																							
<p>WIIG Knowledge Management Model (1993)</p>	<p>KM cycle as defined in this model is being practiced as found during the study. Various activities for building knowledge are being taken up by the hospitals and retention of these is being practiced. It is noticed that proper method of data storage is not applied but it can be said that a structured method for holding knowledge have high practical application. As far as using the knowledge is concerned training programme and inter departmental meetings are being practiced for practical utilization of the knowledge. The practical application noticed is as given</p>																																							
	<table border="1"> <thead> <tr> <th data-bbox="574 621 911 659">Activities</th> <th data-bbox="911 621 1029 659">Strong</th> <th data-bbox="1029 621 1192 659">Moderate</th> <th data-bbox="1192 621 1281 659">Low</th> <th data-bbox="1281 621 1380 659">None</th> </tr> </thead> <tbody> <tr> <td data-bbox="574 659 911 768">Knowledge management as a business strategy</td> <td data-bbox="911 659 1029 768"></td> <td data-bbox="1029 659 1192 768">✓✓</td> <td data-bbox="1192 659 1281 768"></td> <td data-bbox="1281 659 1380 768"></td> </tr> <tr> <td data-bbox="574 768 911 842">Managing intellectual assets strategy</td> <td data-bbox="911 768 1029 842"></td> <td data-bbox="1029 768 1192 842">✓✓</td> <td data-bbox="1192 768 1281 842"></td> <td data-bbox="1281 768 1380 842"></td> </tr> <tr> <td data-bbox="574 842 911 951">Individual knowledge asset responsibility strategy</td> <td data-bbox="911 842 1029 951">✓✓</td> <td data-bbox="1029 842 1192 951"></td> <td data-bbox="1192 842 1281 951"></td> <td data-bbox="1281 842 1380 951"></td> </tr> <tr> <td data-bbox="574 951 911 1024">Strategy for Knowledge creation</td> <td data-bbox="911 951 1029 1024"></td> <td data-bbox="1029 951 1192 1024"></td> <td data-bbox="1192 951 1281 1024">✓✓</td> <td data-bbox="1281 951 1380 1024"></td> </tr> <tr> <td data-bbox="574 1024 911 1098">Strategy for Knowledge transfer</td> <td data-bbox="911 1024 1029 1098">✓✓</td> <td data-bbox="1029 1024 1192 1098"></td> <td data-bbox="1192 1024 1281 1098"></td> <td data-bbox="1281 1024 1380 1098"></td> </tr> <tr> <td data-bbox="574 1098 911 1171">Customer oriented knowledge strategy</td> <td data-bbox="911 1098 1029 1171"></td> <td data-bbox="1029 1098 1192 1171">✓✓</td> <td data-bbox="1192 1098 1281 1171"></td> <td data-bbox="1281 1098 1380 1171"></td> </tr> </tbody> </table>					Activities	Strong	Moderate	Low	None	Knowledge management as a business strategy		✓✓			Managing intellectual assets strategy		✓✓			Individual knowledge asset responsibility strategy	✓✓				Strategy for Knowledge creation			✓✓		Strategy for Knowledge transfer	✓✓				Customer oriented knowledge strategy		✓✓		
Activities	Strong	Moderate	Low	None																																				
Knowledge management as a business strategy		✓✓																																						
Managing intellectual assets strategy		✓✓																																						
Individual knowledge asset responsibility strategy	✓✓																																							
Strategy for Knowledge creation			✓✓																																					
Strategy for Knowledge transfer	✓✓																																							
Customer oriented knowledge strategy		✓✓																																						
<p>SECI Model of Ikujiro Nonaka and Hirotaka Takeuchi (1995)</p>	<p>The process of KM as explained in this model can be related to the activities taken up by the hospitals which can be regarded as a part of the KM process. However, as seen from the research, there is absence of a structured flow of activities. Though various activities for capturing and retention of knowledge are being applied, the emphasis on capturing tacit knowledge is found to be lacking. The training programmes for doctors and its practice in patient care can be regarded as the internalization process of knowledge in the hospitals. The healthcare sector can develop a structured KM process with emphasis on the components of this Model. The practical application noticed is as given</p>																																							
	<table border="1"> <thead> <tr> <th data-bbox="574 1661 911 1698">Activities</th> <th data-bbox="911 1661 1029 1698">Strong</th> <th data-bbox="1029 1661 1192 1698">Moderate</th> <th data-bbox="1192 1661 1281 1698">Low</th> <th data-bbox="1281 1661 1380 1698">None</th> </tr> </thead> <tbody> <tr> <td data-bbox="574 1698 911 1772">Tacit to tacit through sharing of experience</td> <td data-bbox="911 1698 1029 1772"></td> <td data-bbox="1029 1698 1192 1772">✓✓</td> <td data-bbox="1192 1698 1281 1772"></td> <td data-bbox="1281 1698 1380 1772"></td> </tr> <tr> <td data-bbox="574 1772 911 1881">Codification of Tacit knowledge into documents, manuals</td> <td data-bbox="911 1772 1029 1881"></td> <td data-bbox="1029 1772 1192 1881"></td> <td data-bbox="1192 1772 1281 1881">✓✓</td> <td data-bbox="1281 1772 1380 1881"></td> </tr> </tbody> </table>					Activities	Strong	Moderate	Low	None	Tacit to tacit through sharing of experience		✓✓			Codification of Tacit knowledge into documents, manuals			✓✓																					
Activities	Strong	Moderate	Low	None																																				
Tacit to tacit through sharing of experience		✓✓																																						
Codification of Tacit knowledge into documents, manuals			✓✓																																					

	<table border="1"> <tr> <td>Systematic flow of knowledge</td> <td></td> <td>✓✓</td> <td></td> <td></td> </tr> <tr> <td>Review, addition, combination and categorization of knowledge</td> <td></td> <td></td> <td>✓✓</td> <td></td> </tr> <tr> <td>Using knowledge from manuals and stored data</td> <td></td> <td>✓✓</td> <td></td> <td></td> </tr> <tr> <td>Promotion of individual learning</td> <td>✓✓</td> <td></td> <td></td> <td></td> </tr> </table>	Systematic flow of knowledge		✓✓			Review, addition, combination and categorization of knowledge			✓✓		Using knowledge from manuals and stored data		✓✓			Promotion of individual learning	✓✓													
Systematic flow of knowledge		✓✓																													
Review, addition, combination and categorization of knowledge			✓✓																												
Using knowledge from manuals and stored data		✓✓																													
Promotion of individual learning	✓✓																														
Von Krogh and Roos Model (1995)	<p>The hospitals are found to have taken up activities to capture knowledge and utilize these for performance enhancement. It is noticed that social knowledge acquisition through information sharing, subscription to medical journals, membership of professional organizations/ technical collaboration, tie up with specialists of other hospitals, mentoring by team leader, etc. are being taken up. The concept of difference of social and individual knowledge and the need to acquire social knowledge as explained by this model is found to be practically applied in varying degrees. The practical application noticed is as given</p> <table border="1"> <thead> <tr> <th>Activities</th> <th>Strong</th> <th>Moderate</th> <th>Low</th> <th>None</th> </tr> </thead> <tbody> <tr> <td>Knowledge creation</td> <td></td> <td>✓✓</td> <td></td> <td></td> </tr> <tr> <td>Sharing of local knowledge</td> <td></td> <td>✓✓</td> <td></td> <td></td> </tr> <tr> <td>Communication and connection</td> <td></td> <td></td> <td>✓✓</td> <td></td> </tr> <tr> <td>Networks among members/employees</td> <td>✓✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Management of Human resource</td> <td></td> <td>✓✓</td> <td></td> <td></td> </tr> </tbody> </table>	Activities	Strong	Moderate	Low	None	Knowledge creation		✓✓			Sharing of local knowledge		✓✓			Communication and connection			✓✓		Networks among members/employees	✓✓				Management of Human resource		✓✓		
Activities	Strong	Moderate	Low	None																											
Knowledge creation		✓✓																													
Sharing of local knowledge		✓✓																													
Communication and connection			✓✓																												
Networks among members/employees	✓✓																														
Management of Human resource		✓✓																													
Kogut and Zander's KMM (1996)	<p>It is noticed that various knowledge activities as capacity building of employee, training programmes & meetings, sharing best practices, staff attraction/retention, hiring of experienced manpower are being taken up by the healthcare sector. There is a process of learning both through in house and external training. The practical application noticed is as given</p> <table border="1"> <thead> <tr> <th>Activities</th> <th>Strong</th> <th>Moderate</th> <th>Low</th> <th>None</th> </tr> </thead> <tbody> <tr> <td>Facilitation of communication</td> <td></td> <td>✓✓</td> <td></td> <td></td> </tr> <tr> <td>Knowledge creation</td> <td></td> <td></td> <td>✓✓</td> <td></td> </tr> <tr> <td>Learning</td> <td>✓✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Coordination among individuals</td> <td></td> <td>✓✓</td> <td></td> <td></td> </tr> <tr> <td>Knowledge for replication</td> <td></td> <td>✓✓</td> <td></td> <td></td> </tr> </tbody> </table>	Activities	Strong	Moderate	Low	None	Facilitation of communication		✓✓			Knowledge creation			✓✓		Learning	✓✓				Coordination among individuals		✓✓			Knowledge for replication		✓✓		
Activities	Strong	Moderate	Low	None																											
Facilitation of communication		✓✓																													
Knowledge creation			✓✓																												
Learning	✓✓																														
Coordination among individuals		✓✓																													
Knowledge for replication		✓✓																													

The 7-Circle KMM of Ologbo and Nor (2015)	The various steps as explained by this model are found to be in place though the degree of application and initiatives vary. There are initiative to introduce new technologies and equipment and strategic partnership for learning. Further Inter departmental meetings are organized where sharing of best practices takes place as observed. The sector is also found to be taking up policies for staff attraction/retention and regular mentoring by team leader is helping in the learning process. The practical application noticed is as given				
	Activities	Strong	Moderate	Low	None
	KM initiative		✓✓		
	Supportive organisational culture for KM		✓✓		
	Employees create, share and apply knowledge	✓✓			
	Integration of process and practice			✓✓	
	Application of IT for KM		✓✓	✓✓	
	Coordination among employees		✓✓		
	Management support, recognition, respect and reward for KM		✓✓		

6. Conclusion

Considering the strong requirement of knowledge upgradation and continuous process of learning in the healthcare sector, it is important that a structured knowledge management process is followed so that there is a streamlined process of knowledge capture, acquisition, storage, codification, refinement and dissemination. It is found during the research that the awareness as to the need of information management for efficiency and organisational growth is present in the organisations. However the pattern of KM and the structure of managing knowledge as found varies. As far as the practical application of KM models is concerned, adoption of particular model is not noticed though various components of the models under study are being practiced. It is seen that components of each of the models are significant for the healthcare sector, however a single model is not being practically applied and activities that conforms to all the models under study are being practiced. It can thus be inferred from the research that the healthcare sector needs special emphasis in terms of KM practices and a special model for KM encompassing activities of all other models may be developed so that KM process can take place under a structured framework.

References

- 1) ACM: Ubiquity - Working Knowledge: How Organizations Manage What they do (1998), Harvard Business School Press
- 2) Bordoloi, P and Islam, N. "Knowledge Management Practices and Healthcare Delivery: A Contingency Framework" *The Electronic Journal of Knowledge Management* Volume 10 Issue 2 (pp110-120,).
- 3) Choi, B., Poon, S.K. & Davis, J.G., Effects of knowledge management strategy on organizational performance: A complementarity, *The international Journal of Management Science* , 36, 2006, 235 – 251.
- 4) Dr. Nirmala Devi (2016), Status of Public Health Care Delivery System—A case study of Nagaon and Nalbari district of Assam (India), *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)* Volume 22, Issue 10, Ver. 12 (October. 2017) PP 42-48
- 5) Dr. Indranee Dutta Shailly Bawari (2007) Health and Healthcare in Assam A Status Report, Centre for Enquiry into Health and Allied Themes (CEHAT), 2007
- 6) Ebrahim, A. N. & Fathi, A.H. (2008), Knowledge management initiative at the Ministry of Health in the Kingdom of Bahrain: a case study. 38, pp 535-553.
- 7) Government of Assam. Assam Human Development Report 2014. Planning and Development Department. Guwahati; 2016.
- 8) Gholam Ali Ahmady, Aghdas Nikooravesh, Maryam Mehrpour, *Procedia-Social & Behavioural Sciences*,230 (2016) pp 387-395
- 9) Knowledge Management policy for Health - Service, Education and Research, Department of Health Research
- 10) Mathur (2003), The role of Information Technology in designs of healthcare trade. Indian council for research on international economic relations, Working Papers No.111
- 11) Meenakshi Mangotra (Sharma) and Rachna Mahajan (2015), A Comparative Study of Knowledge Management Practices in Government Hospitals in North India, *Advances in Economics and Business Management (AEBM)*, Volume 2, Number 3; January-March, 2015 pp. 210-214
- 12) Murray Jennex (2006), San Diego State University, USA Lorne Olfman, Claremont Graduate University, USA, Knowledge Management Success Factors and Models, p 195-196 DOI: 10.4018/978-1-59904-261-9.ch011
- 13) Prof. Rajbir Singh¹ , Anand Chauhan (2016) Knowledge Management Strategy In Indian Healthcare Sector, *International Journal of Science Technology & Management*, Vol-5 issue 4, 2016
- 14) Puri, S. K., Sahay , S. & Lewis, J. (2009), Building participatory HIS networks: A case study from Kerala, India . *Information and Organization* , 19, pp 63–83.
- 15) Qiao-yuan YAN , Fei XIANG, Xiao-xu SHI, Qin ZHU, Implementation of Knowledge Management in Chinese Hospitals, *Current Medical Science*, April 2018, Volume 38, [Issue 2](#), pp 372–378
- 16) Radmila Micić, Leadership Role In Certain Phases of Knowledge Management Processes, *EKOHO MIKA*, Vol. 61, october-december 2015, № 4, pp 47-56
- 17) Rajbir Singh and Anand Chauhan (2016) , *International Journal of Current Engineering and Technology*, Vol.6, No.2 (April 2016), pp 581-85
- 18) Sanghani, D. P. (2009), Knowledge Management: Inter Industry Comparison in India. Queensland University of Technology, Australia, pp 1-21.

- 19) Sheffield, J. "Pluralism in Knowledge Management: a Review" *Electronic Journal of Knowledge Management* Volume 7 Issue 3, (pp387 - 396),