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A Study of Knowledge Management Implementation in I.T Companies

KEYWORDS: Knowledge Management (KM) , Software Development Life Cycle (SDLC), Information Technology (I.T), Tacit, Explicit, Software Engineering, Rational Unified Process (RUP), Rapid Application Process (RAP).

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ABSTRACT *The knowledge Management is the activity related to human capability. In this era of knowledge driven society the acquisition, organization, sharing and usage of knowledge have been a focus point for vision in management. The integrity of knowledge helped in improving systems in organization. The present paper considers the KM implementation in selected I.T companies of Pune region. The paper contemplates to get an insight into the different stages of SDLC (Software Development Life Cycle) where the KM is considered crucial. The study presents various aspects of KM in the selected five companies of the region.*

Introduction to Knowledge Management :

Today, in this world of globalization, there is a growing competition and influence of Information Technology on every sphere of business; and it has become very difficult for the organization to survive with only land, labour and capital resources. To carve its niche in the market, the organizations need to look beyond the traditional system and be more innovative in approach . In this scenario innovation becomes the key factor to sustain and the knowledge is being considered as basic enabler of innovation. Knowledge is an intellectual asset that plays a key role in the success and survival of an organization. This knowledge residing in the brains and minds of the people acts as intangible intellectual asset of the organization. It is challenging for any organization to exploit this knowledge asset in a way which will improve productivity, customer relations and cut cost and time. Hence, there is a need of a systematic approach for managing this knowledge which will enable the company to strengthen its core capabilities and compete more effectively in the market place. This led to the introduction of Knowledge Management, which helps in creating, storing and sharing knowledge in the organization. Amrit tiwana defined knowledge managemt as , "KM enables the creation, distribution and exploitation of knowledge to create and retain greater value from core businesses competencies. KM addresses business problems particular to your business – whether it is creating and delivering innovative products or services, managing and enhancing relationships with customers, partners and suppliers or improving work processes. The primary goal of KM in a business context is to facilitate opportunistic application of fragmented knowledge through integration."

Knowledge can be of two kinds, Tacit and Explicit knowledge. Tacit knowledge is the intellectual knowledge of people gained through experiences learning and sharing. Explicit is the knowledge coded in the form of documents, insights, reports etc. Knowledge Management focus on exploiting both tacit and explicit knowledge to achieve business objective and improve its efficiency.

Knowledge Management Activities and phases:

Knowledge Management comprises of activities which help to exploit tacit and explicit knowledge for overall benefit of the organization. These activities aims to achieve the goal of knowledge management system. Following can be summarized as basic activities performed in knowledge management. The Figure 1 below represents the activities of KM.

Figure : 1 Knowledge Management Cycle.Create : Knowledge is created i.e knowledge is identified and stored and it is created for use in later stages

Organize: Here the knowledge is properly filtered and organized so that it can be efficiently retrieved.

Disseminate: Knowledge is shared via proper means among the employees, clients, vendors and users.

Discover : Knowledge retrieved is used and implemented in various business activities.

Learn : Knowledge sharing increases the productivity, and it enables and motivate learning.

Research Objectives:

- To study the Knowledge Management initiatives in selected companies.
- To understand the technology deployed for Knowledge Management.
- To make a comparison of selected companies' usage of Knowledge Management in SDLC.

Research Methodology:

The present study deals with the of KM in software development companies of the Pune region. The study is based on

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Primary data as well as secondary data collection methods. The primary data has been collected via structured questionnaire having close ended multiple choice questions. The secondary data is collected from company portals and white papers of respective companies. The questionnaire contained questions pertaining to KM and SDLC process. A sample of 5 units has been selected using convenience sampling method.

Research Limitation
The present research is only limited to five companies selected from Pune region.

Technology deployment for in KM and features.
For implementing the Knowledge Management cycle in any organization, technology plays vital role. Many organization use different tools for implementing these activities such as a Database Management system, Web Portal, Search Engines, Groupware Software , Social networking, Intranet, Internet or Extranet. Microsoft recently has launched its new server based program . The given below Figure 2 shows the SharePoint Features.

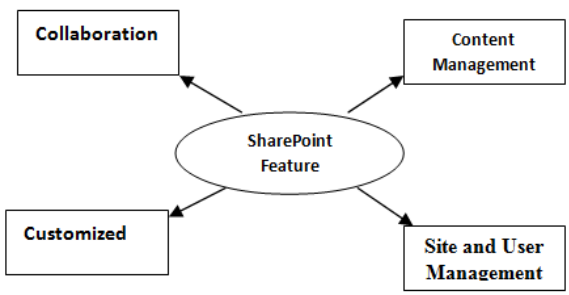

Figure 2 : Microsoft SharePoint features

SharePoint which brings all these activities on one single platform. Microsoft SharePoint helps to implement advanced Knowledge Management activities. All the sample five companies selected for the study are using Microsoft SharePoint as their collaboration tool. Microsoft SharePoint is web application platform developed by Microsoft. It is a business collaboration platform for the enterprise and allows individuals in an organization to easily create and manage their own collaborative web site.

Collaboration Features:
These features provides various activities which facilitate collaborative environment in the organization. Various functions are Tasks, Announcements, Share, Calendar, Documents Library, Form Library, Contact, Survey, Discussion Forum etc.

Content Management Features:
These features allow to organize store disseminate the contents of the organizations. Various functions are WebParts, Picture Library, Blog pages, Wiki pages, search pages, Mobile access, Predefined Workspace, Tree View Breadcrums etc.

Site and User Management Features :
These features allow maintenance, customization of sites developed. Various functions are Domain Name supported, Control Panel, File Blocking, Site based user management tracking users etc.

Customized Features :
These features allows customization such as Browser based customization, Themes, Master Pages, Workflow etc. Following Table 1 represents the Features of SharePoint and KM activities.

KM Activity SharePoint	Create	Organize	Capture	Access/Search /Disseminate	Use/Discover	Share/Learn
Collaboration feature	Yes	Yes	yes	Yes	yes	Yes
Content Management	Yes	Yes	yes	Yes	yes	Yes
Site User Management	-	-	yes	Yes	-	Yes
Customized Features	Yes	-	yes	-	-	Yes

Table 1: Comparing the features of sharepoint and knowledge management activities

Profile of the Selected Companies:
The research paper studies software companies having implemented the knowledge management systems. For the present study 5 Companies are selected from Pune region. All the companies selected are of international stature. Following are the companies undertaken for the study:

Accenture.
Accenture is multinational company providing IT solution, services and Business Process Outsourcing serving to clients across the globe. Accenture's Application Development and Maintenance services provides complete end to end solution to its clients right from requirement analysis, design to implementation and maintenance of the software. Accenture throughout its journey of software development has incorporated many lifecycle models like waterfall, RAD, RUP, Agile and Object Oriented. Accenture provides an innovative, faster, cost effective, design, build and run framework for application development.

IBM
IBM is a world leader in providing technological solutions and innovations. IBM has its presence in India since 1992. IBM offers hardware, software and outsourcing solutions and services. From custom application to ERP to e-business from BPO BPM to KPO the company has huge functional area. IBM has covered a long journey in the field of software development, throughout its journey IBM has been improvising innovating its software development methodology.

TCS (Tata Consultancy Services)
TCS is one of the world leading company tions, business solutions and outsourcing to clients from all verticals. TCS has been rewarded and acknowledged for its reputation of maintaining excellence. TCS' Application development and Maintenance service include custom application development, Application Management, Application modernization or application re-engineering. TCS follows the standards and framework set CMMi Level 5 model along with it TCS implements the development life cycle model depending on the requirement of the project.

Infosys
Infosys established in 1983 by seven people is today's world leader which provides business consulting, technology, engineering and outsourcing services Infosys follows a "software development factory approach" across the lifecycle with frameworks, test Automation tools, Integration of engineering tools, virtualization tools, readily available resource to ensure optimum productivity.

Syntel
Syntel is an world leader in providing Information technology solution and KPO (Knowledge Process Outsourcing) solution. The Global Delivery Model of Syntel allowed offshore developers from India to communicate with the onsite Project managers of client's site via international telecommunication network. Syntel modifies its development methodology or framework as per the requirement of project. It follows wa-

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terfall , rapid application development or iterative model depending on the requirement. It is focused on developing reusable models and frameworks to reduce development cost and time.

KM initiatives and SDLC – A comparison:
Based on the data collected from the company portals the following Table 2 represents the application development framework, model and the KM initiative of each of the company.

SDLC Process	Accenture	IBM	TCS	Infosys	Syntel
SDLC Framework	Design Build Run	Agile Framework	CMMi Level 5 Framework	Analysis -Design -Coding -Testing Maintenancet	-Analyse - Design - Code -Implement Maintenance
SDLC models	Waterfall, Agile RUP Object Oriented	Waterfall Model Agile Model	Waterfall -Agile -Iterative -RAD	Waterfall Agile	- Waterfall -Iterative -RAD
KM Initiative	KX(Knowledge Exchange) OCTEL	KnowledgeView Xtreme Portal Incentives & Rewards	5iKM3	-KShop -P.A.D - PKM	KARP

Table 2 : Software Development strategy and Knowledge Management initiatives.
Following Table 3 shows the statistics of KM usage by various companies during the software development life cycle process.

Company	Analysis (A)	Design (D)	Code (C)	Test (T)	Implement (I)	Maintenance (M)	Focused stages
Accenture	Y	Y		Y		Y	A,D,T,M
IBM	-	Y	Y	-	Y	-	D,C,I
TCS	-	Y	Y	-	-	-	D,C
Infosys	-	-	-	Y	Y	Y	T,I,M
Syntel	Y	Y	Y	-	-	-	A,D,C

Table 3: KM usage in SDLC stages.
Given below Figure 3 displays the chart representing the usage of knowledge management in the stages of SDLC (Software Development Life Cycle).

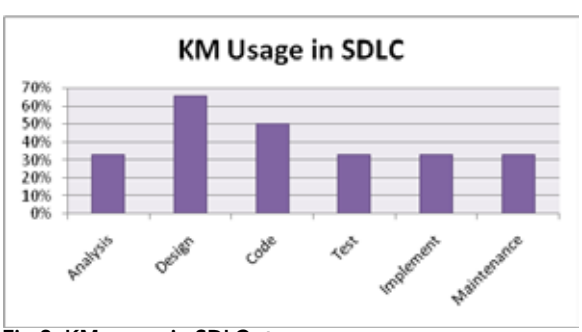

Fig 3: KM usage in SDLC stages

Statistics of above Table 3 reveals that Accenture Company makes maximum use of KM during its development life cycle and maximum usage of KM is in the Design stage of SDLC by all the companies.

Knowledge Sharing Culture :
A successful KM strategy depends on organization's ability to provide a healthy knowledge sharing culture. Knowledge sharing culture plays vital role in knowledge management without which consistent KM activity will not occur. Knowledge sharing culture means motivating, recognizing and encouraging people to work together more effectively, to collaborate, to share and make organizational knowledge more productive. Knowledge sharing culture allows employees to bond socially and technically to share knowledge and information irrespective of their role, job profile or geographical boundaries.

The Table 4 below shows various facilities provided in the respective companies which enables knowledge creation and sharing culture in the organization. The information collected is from primary as well as secondary source of data.

Knowledge Sharing Activity	Accenture	IBM	TCS	Infosys	Syntel
K-Portal	Y	Y	Y	Y	Y
Magazine/Journal	Y	Y	Y	Y	Y
Social Network	Y	Y	Y	Y	Y
Seminar/workshop	Y	Y	Y	Y	Y
Webinars	Y	Y	Y	Y	Y
Rewards/Incentives	Y	Y	Y	Y	Y
Collaborative Tool	Y	Y	Y	Y	Y
Reusability	Y	Y	Y	Y	Y
R&D and Innovation centre	Y	Y	Y	Y	Y
Blogs	Y	Y	Y	Y	Y
Training	Y	Y	Y	Y	Y

Table 4 : K-Sharing culture in the companies.

Findings and Conclusions :
- → Accenture had started implementing the concept of Knowledge Management since 1993.KX (Knowledge XChange) : The KX is a knowledge repository of the company. KX now today is a full fledge KMS providing knowledge sharing, retention and dissemination. Some other tools implemented for knowledge management are PX (Pocket Exchange), SmartWorkplace, OCTEL etc.
- → IBM is one of earliest adapter of Knowledge Management technique since 1994. IBM has also won awards for its knowledge management initiatives. IBM has implemented following tools to leverage KM facility KNowledgeView : it's a knowledge sharing program, containing knowledge repository, discussion forum. IBM has supported Asset reuse program with which the assets are reused for another project thus saving time cost and improve efficiency. Xtreame Portal : portal is designed for knowledge sharing and collaboration for software sellers. Providing knowledge sharing culture , knowledge incentives and rewards training are few more efforts by IBM.
- → TCS has implemented Knowledge Management system

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framework named 5iKM3 based on the Maturity Model. 5iKM3 model addresses the three pillars of KM people, process and technology. TCS has a well defined and impelnted KMS process. TCS is also awarded with MAKE award i.e Most Admired Knowledge Enterprise.

- → Infosys manages organization-wide knowledge using three centrally operated knowledge repositories- knowledge-Shop (K-Shop), Process Asset Database (PAD) , People Knowledge Map (PKM), Incentives for Knowledge sharing, Recognizing and Rewarding Innovation.
- → Syntel has a defined knowledge management system as Knowledge Acquisition and Retention Plan (KARPTM). Syntel's knowledge management is an important part of its strategy. KARP focuses on capture, retain, retrieve and distribute tangible Knowledge Assets through the use of a structured framework of activities, tools and techniques.
- → They all have implemented knowledge management concepts during SDLC process.
- → All companies have implemented collaborative tools in order to motivate and improving knowledge sharing capabilities.
- → Accenture company's prime focus stages of SDLC is Analysis , Design, Testing and Maintenance whereas IBM company uses KM facilities mostly in Design, Coding and Implementation stage of the SDLC. TCS has implemented KM activities mostly in Design and Coding stage of SDLC whereas, Infosys' focused stage for KM activity is in Testing, Implementation and Maintenance stage of SDLC. Syntel's focus is on Analysis, Design and Coding phases of SDLC where KM activity is implemented.
- → All the companies provide a healthy knowledge sharing culture by facilitating various management policies and Information Technology tools for motivating their employees to create, share and disseminate knowledge and also learn and use that knowledge.
- → All the selected companies are listed in prestigious Global MAKE (Most Admirable Knowledge Enterprise) programme administered by Teleos in association with KNOW Network.

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