BHARATI VIDYAPEETH DEEMED UNIVERSITY, PUNE

An Empirical Study of Knowledge Management Practices in Automobile Component Industry in Pune.

BY

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A THESIS

SUBMITTED FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

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(INSTITUTE OF MANAGEMENT AND ENTREPRENURSHIP DEVELOPMENT)

UNDER THE GUIDANCE OF

Dr.Nitin Nayak

Director, BVIMR, New Delhi

2013

CERTIFICATE

This is to certify that the thesis entitled **An Empirical study of Knowledge Management Practices in Automobile Component Industry in Pune,** which is being submitted herewith for the award of the Degree of Doctor of Philosophy in Management under the faculty of Management studies of Bharati Vidyapeeth University, Pune is the result of the original research work completed by Mrs.Deepali Satish Pisal, under the supervision and guidance of Dr. Nitin Nayak and to best of my knowledge and belief the work embodied in this thesis has not formed earlier the basis for the award of any Degree or similar title of this or any other University or examining body.

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CERTIFICATE OF THE GUIDE

This is to certify that the thesis entitled "**An Empirical study of Knowledge Management Practices in Automobile Component Industry in Pune",** which is being submitted herewith for the award of the Degree of Doctor of Philosophy in Faculty of Management studies of Bharati Vidyapeeth University, Pune is the result of the original research work completed by Mrs.Deepali Satish Pisal, under my the supervision and guidance. To best of my knowledge and belief, the work embodied in this thesis has not formed earlier the basis for the award of any Degree and Diploma or similar title of this or any other University or examining body.

Date :
Place :

Dr.Nitin Nayak
Research Guide

Declaration by the Candidate

I declare that the thesis entitled **"An Empirical study of Knowledge Management Practices in Automobile Component Industry in Pune"** Submitted by me for the degree of Doctor of Philosophy is the record if work carried out by me during the period from 2009 to 2013 under the guidance of DR.NITIN NAYAK, and has not formed the basis for the award of any degree, diploma, associateship, fellowship, titles in this or any other university or other Institution of higher learning.

I further declare that the material obtained from other sources has been duly acknowledge in the thesis.

PLACE :PUNE
DATED : **DEEPALI SATISH PISAL**

An Empirical Study of Knowledge Management Practices in Automobile Component Industry in Pune.

I. Table of Contents
II. List of
   a) Tables
   b) Graphs
   c) Figures
III. List of Abbreviations
IV. Acknowledgements

Table of Contents

List of Tables

List of Tables contd..

List of Graphs

List of Figures

List of Abbreviations

Sr.No	Heads	Abbreviations
1	American Productivity Quality Centre	APQC
2	Information Technology	IT
3	Journal of Knowledge Management	(JoKM)
4	Knowledge Management	KM
5	Knowledge Management Systems	KMS
6	Literature Review	LR
7	Mahratta Chamber of Commerce, Industries and Agriculture.	MCCI and A
8	Maharashtra Industrial Development Corporation.	MIDC
9	Non Government Organisations	NGOs
10	Organisation for Economic Co-operation Development.	OECD
11	Radio Frequency Identification	RIFD
12	Socialisation, Externalisation, communication, internalization	SECI
13	Small and Medium Enterprises.	SME

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CHAPTER I

INTRODUCTION

1.1 Background

Knowledge Management has become a key word in today's knowledge era. It embraces all types of organizations in the world i.e both with profit motive as well as social motives without profit (NGOs).

Introduction to Knowledge and related terms

We define knowledge as "understanding gained through experience or study". It is "know-how" to do something that enables a person to perform the given task. Knowledge is collection of facts, procedural rules, or heuristics (rule of thumb based on years of experience).

Knowledge Management Fundamentals:

Fundamentals are the components which are essential to understand about Knowledge Management. It flows from data to knowledge.

DATA --- INFORMATION --- KNOWLEDGE

Data: Facts, numbers, pictures or individual entities without context or purpose.

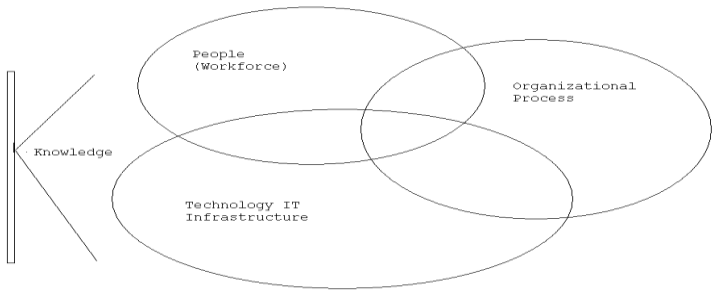
Information: Data that has been organized or processed into a meaningful context to aid decision making.

Knowledge: knowledge is an intellectual capital when people out of creation add value to information, Knowledge is generated. Davanport and Prusak defined Knowledge as "Knowledge is fluid framed experiences, values, contextual information as expert insights that provides a frame work for evaluation and incorporating new experiences of information". It originates in and applied in the minds of knowers. In organisations, it often becomes embedded not only in the documents or repositories, but also in organizational routines, processes, practices, and norms (Davanport- 1998).

Knowledge management is a newly emerging, interdisciplinary business model that has knowledge within the framework of an organization as its focus. It is rooted in many disciplines, including business, economics, psychology and information management. It is the ultimate competitive advantage for today's firm. Knowledge management involves people, technology and processes in overlapping parts.

Figure 1.1 :Overlapping Human, Organisational and Technological Factors of KM

Source : Elias Awad and Hassan Ghaziri "Knowledge Management".



Types of Knowledge

Knowledge is classified into a variety of types:

a) shallow and deep knowledge

b) knowledge as know-how

c) reasoning and heuristics

- c.1) reasoning by analogy
- c.2) Formal reasoning
- c.3) Case-based reasoning (CBR)

d) common sense as knowledge

e) Explicit Knowledge

f) Tacit Knowledge
g) Cultural Knowledge.

Explicit Knowledge : This is simple form of Knowledge, which is easily available and communicated document. **Tacit Knowledge** : This is complex form of Tacit Knowledge, which lies in the human mind and hard to formalize, and often difficult to communicate. **Cultural Knowledge** : It is the Knowledge which includes assumptions and beliefs that are used to understand, describe and explain the reality, well as conventions, value and significance to new information. These shared beliefs, norms and values form the framework in which organizational members, construct reality, recognize the new information and evaluate alternative interpretations and actions.

Michal H.Zack[51] in his research paper "Managing Codified Knowledge", Knowledge can be *tacit* or *explicit*. Tacit knowledge is subconsciously understood and applied, difficult to articulate, developed from direct experience and action, and usually shared through highly interactive conversation, story-telling and shared experience. Explicit knowledge, in contrast, can be more precisely and formally articulated. Therefore, although more abstract, it can be more easily codified, documented, transferred or shared. Explicit knowledge is playing an increasingly large role in organizations, and it is considered by some to be the most important factor of production in the knowledge economy. Imagine an organization without procedure manuals, product literature, or computer software.

The human capacity (potential and actual ability) to take effective action in varied and uncertain situations.
Davenport and Prusak (1998) help us avoid confusion between the terms data, information and knowledge by making the distinction and describing the terms as follows: **Data** is a set of discrete, objective facts about events. In an organisational context, data is most usefully described as structured records of transactions.

Information is data endowed with relevance and purpose. It is a message with a sender and a receiver. Information is meant to change the way the receiver perceives something, to have an impact on his judgement and behaviour, it must "inform" him or her. **Knowledge** is a fluid mix of framed experience, values contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. In organizations, it often becomes embedded not only in documents and repositories but also in organisational routines, processes, practises, and norms." It now becomes more apparent that having knowledge implies that it can be used to solve a problem, whereas having information does not carry the same connotation. Knowledge is a complex concept and highly subjective. It is dependent on a number of factors such as culture, beliefs, values, insights, intuitions and emotions of the individual.

Knowledge assets are of much greater value than any tangible asset that provided organisations with a competitive edge in the past (Davenport and Prusak, 1998). As new technologies, innovation, organisational flexibility and new and better forms of leadership propel the growth and earnings of knowledge-intensive organisations, so the need to extract wealth from brainpower and knowledge (individual and organisational) becomes increasingly pressing. The shift to knowledge as the primary source of value results in the new economy being led by those who manage knowledge effectively.

In the knowledge economy, creation, dissemination, sharing and usage of knowledge are key elements to maintain a sustainable competitive advantage for the organisation. The fact that knowledge is the most important strategic resource is a point of departure for organisations hoping to access and use knowledge as a competitive weapon and has become the focus of organisational competitiveness. However, the organisation must maintain control over the abundance of knowledge flowing between various domains, contain it within boundaries and leverage it for exclusive use. Organisations continue to struggle with questions, such as how can they improve what employees know; how can they add creative insights to business decisions; how can they capitalise upon what others are doing, are they doing same or

similar tasks, have they learned before; and how can they stop employees from reinventing the same or even suboptimal solutions to problems that were already solved by someone. The systematic process of identifying, capturing, leveraging and using knowledge is known as Knowledge Management (KM). Knowledge management is the systematic and organizationally specified process for identifying, acquiring, creating, storing, disseminating and application of knowledge so that other employees may make use of it to be more effective and productive in their work.

Davenport, T.H. & Prusak, L (1998),[52]. Working Knowledge.

The characteristics as :

1. One needs a framed experience
2. It must have a context
3. It must have values
4. It must enable you to take further experience and frame it which leads to decision .
5. At the end it results in to an insight.

What is knowledge Management? –

Leading to evolve Domain of Elements

Various authors have attempted to catch the meaning of KM. However, they offer different elements and dimension of KM.

Literature Review has shown more definitions. They are reproduced and analysed to capture and integrating different elements to understand the scope, nature as well as domain of elements covered by KM . It is oblivious that they are subjected to evolution and also will change with deletion and addition along with the advent of technology.

Knowledge management is the process of gathering, managing & sharing employees capital throughout the organization enhances existing organization business processes, introduces more efficient and effective business process and removes redundant process.

"Knowledge Management is the discipline of enabling individuals, teams and entire organizations to collectively and systematically create, share and apply knowledge, to better achieve their objectives".

"The capabilities by which communities within an organization capture the knowledge that is critical to them, constantly improve it and make it available in the most effective manner to those who need it, so that they can exploit it creatively to add value as a normal part of their work" .

Knowledge Management is a complex process, which deals with Knowledge creation and application or reuse of Knowledge. Knowledge Management basically consists of five steps:

- Knowledge collection
- Organisation
- Data protection
- Preservation
- Dissemination

Then emergence of Knowledge society and need for enhanced competency building among Knowledge workers as a continuous process has necessitated not only the introduction of Information Communication Technology in the information processing but also in the learning strategy.

Introduction to Knowledge Management Practices.

Since the world has become more dynamic, the technologies are also becoming more and more advanced. The new world of knowledge based organization is distinguished from the organization of the last millennium by its emphasis on monitoring and controlling the organization by shared knowledge and external data sources.

“Knowledge management is a discipline that promotes an integrated approach to identifying , managing and sharing all of an enterprise’s information needs”. KM involves certain phases, strategies and processes of identifying, capturing and leveraging knowledge to enhance competitiveness.

Where does KM come from?

-Technology(Infra structure, Database, Web)

-Globalization(World wide markets, workforce mobility)

-Economics (Knowledge economy)

-Customer relations (Quality)

The entire process of Knowledge Management involves certain phases, such as capturing and leveraging knowledge to enhance competitiveness.
Knowledge Management contains integral factors –

1] Using accessible knowledge from external sources.
2] Embedding and data storing in business processes, products and services.
3] Representing knowledge in databases and documents.
4] Transferring, sharing and updating knowledge across the organization.

Knowledge Management Practices – Awad, Ghazari defines knowledge as 'understanding gained through experience or study and Knowledge Management as " a process of capturing and making use of a firm's collective expertise anywhere in the business – on paper, document, database (called explicit knowledge) or in people's heads(called tacit knowledge)".
KM in an organization is facilitated by the coordination among the three important elements i.e people, processes and technologies (particularly information technology).
Knowledge bases are the tools for managing Knowledge, for reasoning, for representing processes and for processing ideas. Textual information is not Knowledge, it contains coded Knowledge, to be decoded, to evaluate.

Why is knowledge management important?

- Avoid repeating past mistakes.
- Highlight good practice to be replicated elsewhere.
- Make our work more relevant, effective and accessible.
- Compare experiences and draw out common issues and challenges.
- Influence policy and strategic thinking by rooting them in experience.
- Make lesson-learning, and thereafter capacity-building, a conscious and habitual process within a team and/or an organization; and Help develop strong networks among people.

The goal of Knowledge management is to capture, store, maintain and deliver useful knowledge in a meaningful form to anyone who needs it, anyplace, anytime within an organization Dr.Aditi Markale, 2011[50].

Knowledge Management it helps to creates exponential benefits from the knowledge as people learn from it. KM has a positive impact on business processes. KM Enables the organization to position itself for responding quickly to customers, creating new markets, developing new products, and dominating emergent technologies. Shortens the learning curve, facilitates sharing of knowledge and quickly enables less trained brokers to achieve higher performance levels. Enhances employee problem-solving capacity by providing access to compiled subject, customer reference and resource files available either directly through the system.

The value of knowledge management

- Foster innovation by encouraging the free flow of ideas.
- Improve decision making.
- Improve customer service by streamlining response time.
- Boost revenues by getting products and services to market faster.
- Enhance employee retention rates by recognizing the value of employees' knowledge and rewarding them for it.
- Streamline operations and reduce costs by eliminating redundant or unnecessary processes.

How to implement KMS?

There is a specific order and therefore a series of sequential steps for its implementation which begin with a problem and ends with forward linkage to a group of persons and to its highest expanse the different cross sections of the Society as a whole.

The steps can be better appreciated with a parallel example :

Step 1: Identify the Business Problem.

(The nature of such problems can be New product development, check the feasibility study)

Step 2: Prepare for Change.

Step 3: Create the Knowledge Management Team.

Step 4: Perform the Knowledge Audit and Analysis.

Step 5: Define the Key Features of the Solution.

Step 6: Implement the Building Blocks for Knowledge Management.

Step 7: Link Knowledge to People.

The field of knowledge management is evolving and is taking advantage of new intelligence tools, which have helped drive growth in the industry. This growth has occurred as a result of changing content needs within the business environment and the eminent need to integrate that content into current workflow practices.

Knowledge management is the collection of processes that govern the creation, dissemination and utilization of Knowledge. It is an audit of "intellectual assets" that highlights unique sources, critical functions and potential bottlenecks which hinder Knowledge flows to the print of use. It protects intellectual assets from decay, seeks opportunities to enhance decisions, service and products by adding intelligence increasing value and providing flexibility.

Knowledge Repository is a computerized system that systematically captures, organizes and categorizes an organization's knowledge. The repository can be searched and data can be quickly retrieved.

Knowledge must be managed efficiently to ensure that the basic objectives for existence are attained to the greatest extent possible. Knowledge management in organizations must be considered from three perspectives with different horizons and purposes :-

1. Business perspective :- Focusing on why, where and to what extent the organization must invest in or exploit Knowledge strategies, products and service, alliances, acquisitions or divestments should be considered from Knowledge related points of view.

2. Management Perspective :- focusing on determining, organizing, directing, facilitating and monitoring knowledge related practices and activities required to achieve the desired business strategies and objectives.

3. Hands on Operational Perspective :- focusing on applying the expertise to conduct explicit

Knowledge Management Life Cycle

Researchers have identified many key aspects of the knowledge management process, including acquisition, dedicated resources, fusion, adaptation and knowledge networking (Davanport and Prusak, 1998), acquiring knowledge, interpreting knowledge and applying knowledge (Elias Awad & Hassan Ghaziri) 2007

Various characteristics and produced four broad dimensions of process, namely, Capturing, Organising, Refining, Transfer.

Knowledge acquisition or Knowledge Capture **-** Organizational knowledge acquisition is the process of developing new content and replacing existing content within the organization's tacit and explicit knowledge base. Many terms also have been used to describe this process: capture, creation, construction, identification, and generation. In accordance with Nonaka and Tackeuch's SECI model, the model for knowledge creation and transformation knowledge is created using four processes to convert tacit and explicit knowledge. The four types of knowledge processes are socialization, externalization, combination, and internalization. Nonaka and Takeuchi posited that tacit knowledge could be made explicit and vice-versa, through social interaction. Organization should acquire knowledge throughout the organization and exchange knowledge even with external partners so that knowledge upgrade can happen constantly through bench-marking, best practices, and feedback of projects experience to improve subsequent projects. NGT model (Nominal Group Technique) is another model for knowledge capture.

Knowledge capturing includes audio files, digital files e-mail. It is important to go to all the sources available and never judge the usefulness of the captured knowledge until after it is subjected to exhaustive testing

After the Knowledge capturing phase, captured data or information should be organized in a way that can be retrieved and used to generate useful

knowledge storage and maintenance of the data. One can use indexing, clustering, cataloging, filtering, codifying, and other methods.

After organizing the information, it should be refined. Data mining can be applied in this phase. Data mining takes explicit knowledge foung in database and transforms it into tacit knowledge. Data mining software is used to find patterns in data, predict behavior, and warn against future problems based on the data supplied in data warehouse.

Knowledge sharing is all about disseminating and making available what is already known for that reason, knowledge sharing is critical to a firm's success as it leads to faster knowledge deployment to various segments of the organization that can greatly benefit from it.

Need of KM in Auto and Auto component Industry

Today's business environment is characterized by continuous, often radical change so new product and innovations are increasing at a faster rate than ever before, along with evolutions in customer preference and need. Effective Knowledge Management is the key driver of new Knowledge and new ideas to the innovation process, to new innovative products, services and solutions. Knowledge Management greatly contribute to improves excellence by – dramatically reducing cost – Continually reinventing the wheel i.e doing the task that has already been done elsewhere, is a costly and inefficient activity, whereas a more systematic reuse of Knowledge will show substantial cost benefits immediately.

Providing potential to expend and grow- Effective Knowledge management dramatically increases speed of response as a direct result of better Knowledge access and application.

Improving products and services – Effective Knowledge management, using more collective and systematic processes, will also reduce the tendency to "repeat the same mistakes'. This is again extremely costly and inefficient. Effective Knowledge management, therefore can improve quality of products and services.

Increasing our value and profitability – with the improvement in quality products and services the value gained by the customers will increase ultimately sale increment and hence profitability.

Responding fast – Better knowing our stakeholder needs, customer needs, needs of employee and industry, for example, has an obvious immediate effect on our relation management.

Innovation of products and services much faster – increase in ability to better collaborate in physical and virtual teams as Knowledge workers is driving the process of new Knowledge creation. Ideas can now be turned into innovative products and services much faster.

As companies adapt and change with the new technologies and environments, certain needs start to emerge. It's important to not only keep track of information, but to gather and compile it from all sorts of sources, before planning accordingly. For this, knowledge management (KM) software has become increasingly popular, and is steadily growing in demand.

This is the study which will focus on KMS in Automobile components manufacturing industry in Pune region.

Motivation : From the research article "Information Technology strategy for Knowledge Management in Indian Automobile components in SME's", responses for this study where from international experts, Indian experts and ACMA members. For all respondents Internet followed by Intranet, Extranet, Data Management System, Data Ware Housing, e-commerce were used for sharing information.

The Rajesh K.Pillania, 2008[40] has quoted that future research can be carried out how the problems faced in any other industry sectors or cross-countries carried comparisons could be done.

Knowledge Management practices applications in services and manufacturing sectors :-

Production Process

The improvement of production management theory, in the manufacturing context, through the application of some core principles. The best production practices worldwide have a common core. The cores principles investigated are the reduction of cycle time, reduction of variability, increase in transparency, and build of continuous improvement into the process. The fundamental rationale underlying these principles is the concept of flow, where production is seen as composed of waiting, transporting, inspecting, and transformation (processing) activities. According to this concept, transformation activities are the only ones that actually add value. Hence, all other activities should be reduced or eliminated from the flow while increasing the efficiency of transformation activities.

KM in Petroleum Industry

1. Create a setting for sharing knowledge, eliminate Communication filters, Prioritize the tasks and keep time budgets.

2. Knowledge Management System A database system that allows managers and employees to share the right information in a timely and efficient fashion.

3. Process of Knowledge creation & innovation.

4.Knowledge Management's Next Generation. The knowledge economy demands a new kind of executive, one who freely shares ideas and expertise across the company while remaining fiercely committed to business unit performance.

5. Human Portals at work.

6. Business Process cultivates what we call “human portals,” a particular type of T shaped Manager who helps people identify third parties in organisations that can provide needed information.

7. Use of Intelligent systems : Data mining is the process of sorting through large amounts of data and picking out relevant information.

World bank case.

KM in an organization is facilitated by the coordination among the three important elements i.e people, processes and technologies (particularly information technology).

Knowledge bases are the tools for managing Knowledge, for reasoning , for representing processes and for processing ideas. Textual information is not Knowledge, it contains coded Knowledge, to be decoded, to evaluate.

From the White paper Primus knowledge solutions, [13]KM best practices for Call Centers, Help Desks and Other Support Envirnoments are:

-Make Knowledge management a natural part of the workflow.

-Provide access to the most relevant Knowledge available.

-Obtain the support of key managers from the top down.

-Address the cultural change that Knowledge management implies.

-Recognize and reward the efforts of Knowledge participants.

-Monitor performance and analyse results for continuous improvement.

KM best practices for World Bank are:

STAGE 1: GET STARTED

Key activities for Stage 1 are to:

1. define knowledge management in terms to which people can relate,
2. identify others to join the cause,
3. look for windows of opportunity,
4. capitalize on intranet systems, and
5. enlist the IT department to provide tools and a balanced view of knowledge management.

STAGE 2: EXPLORE AND EXPERIMENT

Key activities for Stage 2 are to:

1. form a cross-functional knowledge management task force,
2. select pilots or identify current local efforts, and
3. find resources to support the pilots.

STAGE 3: ORGANIZE PILOTS AND KNOWLEDGE MANAGEMENT INITIATIVES

This stage signals the formal implementation of knowledge management initiatives. The goal of Stage 3 is to provide evidence of knowledge management's business value by conducting pilots and capturing lessons learned.

For the knowledge management practitioners responsible for the implementation of pilots, the following are the key activities for Stage 3:

1. fund the pilots,
2. develop methodologies that can be replicated and scaled up, and
3. capture lessons learned.

STAGE 4: EXPAND AND SUPPORT

When an organization reaches Stage 4, knowledge management has proved valuable enough to be officially expanded to become part of the organization's funded activities. Demand for knowledge management support by other parts of the organization tends to be high, which provides additional evidence of its value. Pilot results are an added benefit. High visibility and the authority to expand are a mixed blessing; the added visibility of costs and resources devoted to knowledge management will require more formal business evaluation and ROI justification. The good news is that unless unforeseen factors derail the efforts, the efforts are on the way to being considered a strategic and necessary competency.

Key activities in Stage 4 are to:

1. develop an expansion strategy,
2. communicate and market the strategy, and
3. manage growth and control chaos.

A critical lesson is that a central, cross-functional group has to create an expansion strategy and identify required resources. Resources to successfully support widespread knowledge management initiatives are not automatically available and have to be conscripted or developed from other units. Also, communicating the knowledge management strategy and its rationale to the organization requires the same kind of vigorous marketing as any other large-scale initiative.

STAGE 5: INSTITUTIONALIZE KNOWLEDGE MANAGEMENT

In some ways, Stage 5 is the continuation of Stage 4 to its logical conclusion of full, enterprise-wide deployment. However, Stage 5 differs from Stage 4 in three fundamental ways:

1. it does not happen unless knowledge management is embedded in the business model,
2. the organization structure must be realigned, and
3. evidence of knowledge management competency becomes part of the formal performance evaluation. Sharing and using knowledge become part of the organization's mode of operations, as well as an expected management competency. Only a few organizations have reached this stage, including the World Bank.

(the above stages are taken from APQC's Passport to success series, stages of Implementation. A guide for your journey to knowledge Management Best practices. APQC(American Productivity and Quality Centre).

World Bank Business Headquarters :International Lending and Advisory Services, Washington DC, USA.

Employees : 10,000

Situation

- World Bank wanted to enhance its ability to draw upon its unique development experience and knowledge and share it with clients to better fulfill its global mission of reducing poverty and improving quality of life in developing countries

- Like many organizations, World Bank had a strong information base, but was overwhelmed by the sheer volume of information contained in documents and within people's heads
- World Bank wanted to ensure quality in its content, ensuring trustworthy current sources
- Knowledge management momentum was built from a number of successful independent projects

Strategy

- **World Bank president and knowledge management sponsor, James D. Wolfensohn, envisioned a "knowledge" bank to enable the company to play "a leading role in new knowledge partnership"**
- **World Bank aspired to use knowledge management to increase employee effectiveness and efficiency across the organization**
- **Knowledge management would be rolled out in stages: The first focus was on making knowledge easily accessible to World Bank staff. Secondly knowledge distribution would be expanded to external clients and partners; and lastly external knowledge would be incorporated into its system, thereby defining itself as a clearinghouse for sustainable development knowledge**
- **World Bank defined four areas of knowledge management to be enabled: information, personal thinking, discussion and knowledge synthesis**
- **Appointed a role of program director for knowledge management to drive the organizational strategy and an institutional task force to define an implementation road map.**

Actions

- **World Bank initially identified 80 domains of expertise and built global "communities of practice" from informal communities around each domain to share information and build knowledge**
- **Each community was charged with establishing a help desk, creating an expert directory, gathering relevant project history including best practices and lessons learned, and setting up electronic bulletin**

boards with the help of a full-time knowledge manager and operational staff.

- **Dedicated knowledge management staff oversaw the development and establishment of an enterprise-wide integrated knowledge management framework and classification system.**
- **World Bank leveraged experience and lessons learned from successful early initiative, Africa Live Database, used in daily work by economists to effectively gather and synthesize information**
- **World Bank shifted to a knowledge sharing culture by adding knowledge sharing to the personnel evaluation system and sponsoring a Knowledge Fair and Knowledge Sharing Awards**
- **World Bank rolled out its first knowledge management pilot program, Education Knowledge Management System (Eknowledge managementS) to facilitate knowledge synthesis and identify knowledge needs through an internal web site and Advisory Service that facilitated getting internal clients information they needed and recorded requests and answers.**
- **Over 4% of the Bank's annual administrative budget is allocated to developing the knowledge management system and communities of practice**

Technology

- **Corporate intranet and extranet**
- **Collaboration tools**
- **Lotus Notes**
- **Help desk**
- **Fax/Faxback**

Benefits

- Improved operational effectiveness
- Faster cycle time
- Better quality client services
- Enhanced relationships with clients, partners and stakeholders
- More satisfied employees

This Best-Practice Report is based on a knowledge management (KM) consortium
benchmarking study conducted by the International Benchmarking Clearinghouse, a service of the American Productivity & Quality Center (APQC).

Previous consortium studies include:
-Creating a Knowledge-Sharing Culture,
- Expanding Knowledge Management Externally: Putting Your Knowledge to Work for Customers,
- Knowledge Management and the Learning Organisation: A European Perspective,
- Managing Competitive Intelligence Knowledge in a Global Economy: Emerging Best Practices in Knowledge Management, and
- Using Information Technology to Support Knowledge Management.(APQC)
http://www.researchandmarkets.com//reports/42817/succeessfully_implementing_knowlege _management.

Industry Definition : This class consists of units mainly engaged in manufacturing motor vehicles or motor vehicle engines.
Products and Services : The primary activities of this industry are :

a) Motor cars manufacturing
b) Motor vehicle engine manufacturing

The major products and services in this industry are :

a) Passenger motor vehicle manufacturing segment (Passenger Cars, Utility Vehicles and Multi purpose Vehicles)
b) Commercial Vehicles (Medium, Heavy and Light Commercial vehicles)
c) Two Wheelers
d) Three Wheelers

Key Statistics

Table 1.1 Details of Automobile Prices

	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	
Motor Vehicle Production[3]	8,467,853	9,743,503	11,087,997	10,853,930	11,175,479	Units
Industry Revenue[1]	24,379	26,969	30,507	32,383	33,342*	USD million
Exports[3] (Units)	629,544	806,222	1,011,529	1,238,333	1,530,660	Units
Exports[1] (Revenue)	1,915	2,231	2,552	3,008	3,718*	USD million

Source: [1]Department of Heavy Industry, [3]Society of Indian Automotive Manufacturing (SIAM), National Accounts Division, *ImaginMor estimates, USD 1 = INR 46

Table 1.2 Details of Automobile Production

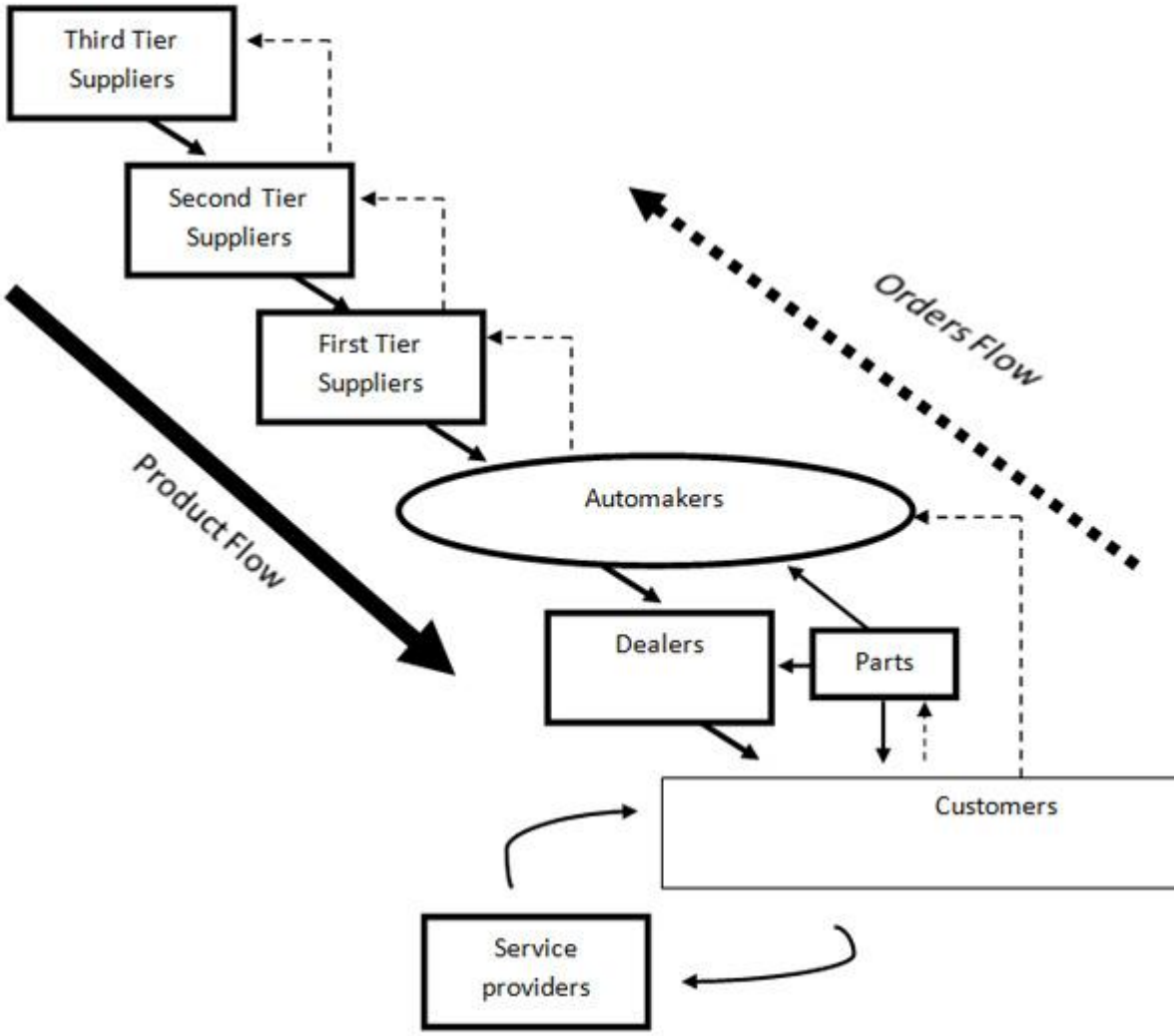
Type of Vehicle	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Units
Passenger Vehicles	1,209,876	1,309,300	1,545,223	1,777,583	1,838,697	Number
Commercial Vehicles	353,703	391,083	519,982	549,006	417,126	Number
Three Wheelers	374,445	434,423	556,126	500,660	501,030	Number
Two Wheelers	6,529,829	7,608,697	8,466,666	8,026,681	8,418,626	Number
Total	8,467,853	9,743,503	11,087,997	10,853,930	11,175,479	Number

Source: Society of Indian Automotive Manufacturing (SIAM)

Table 1.3 Details of Automobile Sales. Source :SIAM

Type of Vehicle	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Units
Passenger Vehicles	1,061,572	1,143,076	1,379,979	1,549,882	1,551,880	Number
Commercial Vehicles	318,430	351,041	467,765	490,494	384,122	Number
Three Wheelers	307,862	359,920	403,910	364,781	349,719	Number
Two Wheelers	6,209,765	7,052,391	7,872,334	7,249,278	7,437,670	Number
Total	7,897,629	8,906,428	10,123,988	9,654,435	9,723,391	Number

Figure 1.2: Details of product flow from contributors.



Source:ImaginMor, Inderscience Enterprises Ltd and United Nations Industrial Development Organisation

The description and the role of each of the contributors are discussed below.

Third Tier Suppliers: These companies provide basic products like rubber, glass, steel, plastic and aluminium to the second tier suppliers.

Second Tier Suppliers: These companies design vehicle systems or bodies for First Tier Suppliers and OEMs. They work on designs provided by the first tier suppliers or OEMs. They also provide engineering resources for detailed designs. Some of their services may include welding, fabrication, shearing, bending etc.

First Tier Suppliers: These companies provide major systems directly to assemblers. These companies have global coverage, in order to follow their customers to various locations around the world. They design and innovate in order to provide "black-box" solutions for the requirements of their customers. Black-box solutions are solutions created by suppliers using their own technology to meet the performance and interface requirements set by assemblers.

First tier suppliers are responsible not only for the assembly of parts into complete units like dashboard, breaks-axel-suspension, seats, or cockpit but also for the management of second-tier suppliers.

Automakers/Vehicle Manufacturers/Original Equipment Manufacturers (OEMs):

After researching consumers' wants and needs, automakers begin designing models which are tailored to consumers' demands. The design process normally takes five years. These companies have manufacturing units where engines are manufactured and parts supplied by first tier suppliers and second tier suppliers are assembled. Automakers are the key to the supply chain of the automotive industry. Examples of these companies are Tata Motors, Maruti Suzuki, Toyota, and Honda. Innovation, design capability and branding are the main focus of these companies.

Dealers: Once the vehicles are ready they are shipped to the regional branch and from there, to the authorised dealers of the companies. The dealers then sell the vehicles to the end customers.

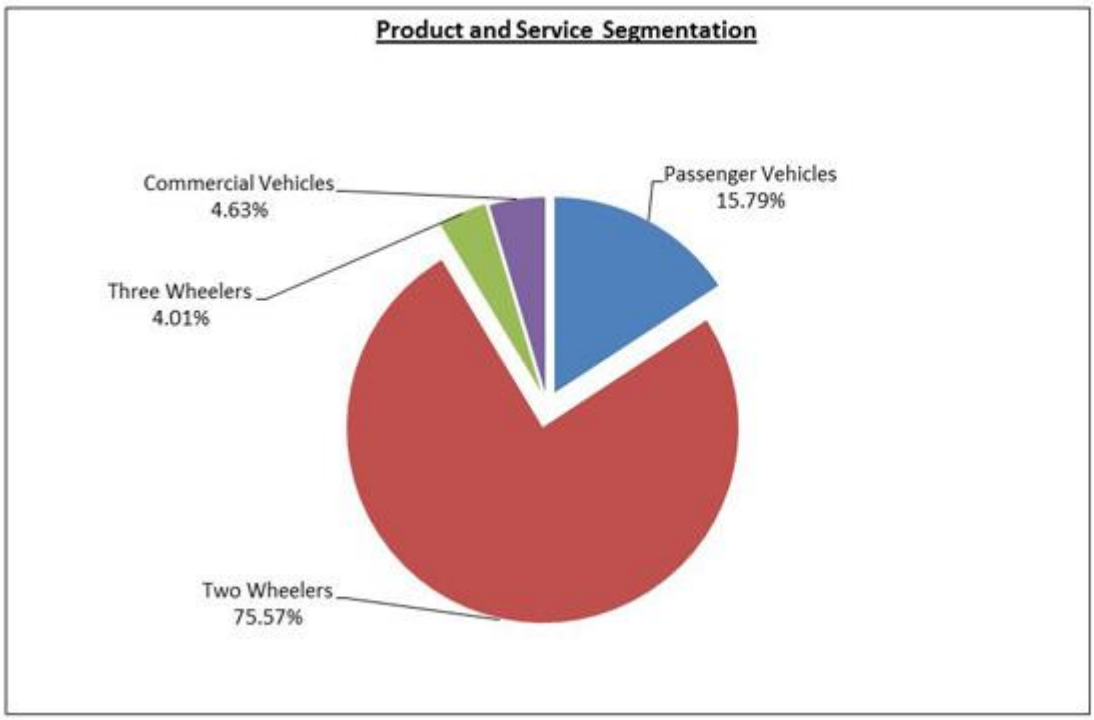
Parts and Accessory: These companies provide products like tires, windshields, and air bags etc. to automakers and dealers or directly to customers.

Service Providers: Some of the services to the customers include servicing of vehicles, repairing parts, or financing of vehicles. Many dealers provide these services but, customers can also choose to go to independent service providers.

Segmentation

Graph 1.1 : Details of Product and Service Segmentation of Automobile vehicles.

Product and Service Segmentation



Source: Society of Indian Automotive Manufacturing (SIAM)

The automotive industry of India is categorised into passenger cars, two wheelers, commercial vehicles and three wheelers, with two wheelers

dominating the market. More than 75% of the vehicles sold are two wheelers. Nearly 59% of these two wheelers sold were motorcycles and about 12% were scoters. Mopeds occupy a small portion in the two wheeler market however; electric two wheelers are yet to penetrate.

The passenger vehicles are further categorised into passenger cars, utility vehicles and multi-purpose vehicles. All sedan, hatchback, station wagon and sports cars fall under passenger cars. Tata Nano, is the world's cheapest passenger car, manufactured by Tata Motors - a leading automaker of India. Multi-purpose vehicles or people-carriers are similar in shape to a van and are taller than a sedan, hatchback or a station wagon, and are designed for maximum interior room. Utility vehicles are designed for specific tasks. The passenger vehicles manufacturing account for about 15% of the market in India.

Commercial vehicles are categorised into heavy, medium and light. They account for about 5% of the market. Three wheelers are categorised into passenger carriers and goods carriers. Three wheelers account for about 4% of the market in India.

Table 1.4 Details of Product and Service Segmentation

Segment	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**Unit**
Passenger Vehicles (PVs)						
Passenger Car	10.22	10.39	9.91	10.65	12.42	%
Utility Vehicles (UVs)	2.15	2.23	2.18	2.18	2.39	%
Multi Purpose Vehicles (MPVs)	0.87	0.82	0.75	0.82	0.98	%
Total Passenger Vehicles	**13.25**	**13.44**	**12.83**	**13.65**	**15.79**	%
Commercial Vehicles (CVs)						
Medium and Heavy Commercial Vehicles (M&HCVs)						

Passenger Carriers	0.36	0.32	0.32	0.28	0.43	%
Goods Carriers	2.01	2.19	2.01	2.44	2.10	%
Total M&HCVs	**2.37**	**2.51**	**2.33**	**2.73**	**2.53**	**%**
Light Commercial Vehicles (LCVs)						
Passenger Carriers	0.28	0.25	0.25	0.24	0.32	%
Goods Carriers	1.17	1.27	1.36	1.67	1.77	%
Total LCVs	**1.45**	**1.52**	**1.61**	**1.90**	**2.10**	**%**
Total Commercial Vehicles	**3.82**	**4.03**	**3.94**	**4.63**	**4.63**	**%**
Three Wheelers						
Passenger Carriers	2.56	2.17	2.39	2.34	2.51	%
Goods Carriers	1.61	1.73	1.65	1.65	1.51	%
Total Three Wheelers	**4.17**	**3.90**	**4.04**	**4.00**	**4.01**	**%**
Two Wheelers						
Scoters/Scooterettee	13.01	11.68	10.21	9.31	11.57	%
Motorcycles/Step-Throughs	61.24	62.86	65.24	64.83	59.35	%
Mopeds	4.52	4.08	3.74	3.52	4.47	%
Electric Two Wheelers	-	-	-	0.07	0.19	%
Total Two Wheelers	**78.76**	**78.63**	**79.18**	**77.73**	**75.57**	**%**
Grand Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**%**

Source: Society of Indian Automotive Manufacturing (SIAM)

Vehicle Registration:

India had over 100 million vehicles registered on its roads in the year 2008. This is a growth of about 100% in the past 9 years. Over 77% and about 77 million of these vehicles are two wheelers, about 14% and over 14 million are cars, jeeps and taxis. Over 5 million and over 1 million vehicles registered are goods vehicles and buses respectively.

Two wheelers account a significant market share. Tata Motors with the launch of Tata Nano is trying to attract some of these two wheeler buyers to buy a small, cheap and affordable passenger car.

Table 1.5 Details of Total Number of Vehicle Registrations in India from 2001-2008

Year	All Vehicles	Two Wheelers	Cars, Jeeps and Taxis	Buses	Goods Vehicles	Other Vehicles[1]	Units
2001	54,991	38,556	70,58	634	2,948	5,795	Thousands
2002	58,924	41,581	76,13	635	2,974	6,121	Thousands
2003	67,007	47,519	85,99	721	3,492	6,676	Thousands
2004	72,718	51,922	94,51	768	3,749	6,828	Thousands
2005*	80,045	57,417	10,460	822	4,053	7,337	Thousands
2006*	88,068	63,487	11,571	879	4,345	7,891	Thousands
2007*	96,808	70,141	12,810	936	4,652	8,464	Thousands
2008*	106,591	77,588	14,222	1,003	5,018	9,065	Thousands

Source: Department of Road Transport & Highways, [1]includes tractors, trailors, three wheelers (passenger vehicles), and vehicles which are not separately classified.

Major Market Segments

About 91% vehicles sold in India are used for household purpose for their personal use. Less than 10% of the vehicles sold are used for commercial purpose and various industries.

Source: Society of Indian Automotive Manufacturing (SIAM)

1.2 Auto Companies in Pune

Pune is the leading center for the automotive sector in India, as well as one of the top automotive centers globally. Pune is a Auto Hub designated by India. In the past year alone, three massive new plants from General Motors, Volkswagen and Mahindra & Mahindra were inaugurated here. The Chakan-Talegaon Belt is becoming one of the most dense automotive clusters in the world.

Demand is determined by vehicle prices and affordability, customer preferences, running cost of the vehicle (fuel and maintained), prevailing interest rates in the market as well as demographic factors.

Indian Automobile Industry growing at the rate of 17%. Since last few years it is providing direct and indirect employment to 14 million people contributes 5% of the total GDP of India. Current GDP is about USD 650 billion and is expected to grow in next decade to USD 1390. Automotive Industry propose to contribute around double of current contribution.

Pune is one of the premier industrial centers of India. It is home to one of the world's three largest two-wheeler manufacturers, Bajaj Auto. Other global automobile names like Telco, Mercedes Benz and Bajaj Tempo also have huge manufacturing facilities here.

Apart from the auto giants, a large number of engineering, electronic and electrical industries have setup base in the large, medium and small scale sectors. The industrial township of Pimpri and Chinchwad, adjacent to the main city, is dotted with over 4,000 manufacturing units. This vast and well established industrial base has imbibed the city with a 'professional' ethos and work culture.

Research Institutes, Suppliers & Infrastructure Players

ARAI (Automotive Research Association of India)

ARAI is a the premier research and certification institution for the automotive industry in India. It has a beautiful campus on top of a hill in central Pune (near 'Vetal Tekdi').

In addition to the Auto OEMs (Original Equipment Manufacturers), Pune has a wide range of Tier-1 ,Tier-2 and infrastructure suppliers. Prominent Industry Players include:

Bharat Forge: Bharat Forge is one of the top forging companies in the world. They manufacture a wide range of forged auto components. Their Pune facility includes their HQ, Design Center and Manufacturing Facility. **Sandvik:** Sandvik is a world leader in cutting tools.

Software & Information Technology : Software and IT are increasingly playing an important role cars and automotive manufacturing. Many leading global CAD/CAM/CAE Software Leaders are based in Pune. These include: Siemens (formerly UGS), PTC, Ansys. Important IT Outsourcing Players in this space in Pune include Geometric and KPIT Cummins.

Scope of the study

Knowledge to enhance competitiveness. An interest in all dimensions of Knowledge as acquired and developed by members to be used for their organizations, including analysis and synthesis of this Knowledge into tools for learning, using, developing and sharing through a variety of means including but not limited to documenting Knowledge for later use.

Innovative means to link and enable people to directly exchange ideas and learning to increase the relevant Knowledge available for use in their organizations. Attention to all aspects of the Knowledge lifecycle, including but not limited to Knowledge creation, sharing, capture, organization, management, reuse and preservation. Focus on techniques and tools for collaboration, for organizing Knowledge repositories, for demonstrating the economic value of Knowledge Management activities, for promoting organizational learning techniques and applications and for increasing understanding of Knowledge economics. Concern for all aspects of an organization, including culture, policy, process, management and technology that affect its ability to create and transfer Knowledge.

Fostering networking and collaborating with all parts of the organization, including but not limited to IT, HR, R & D, document management to facilitate a continuous learning environment and reduce Knowledge hoarding.

Identification of right skill sets as a process can be planned but availability of the right skill set in required proportion is emerging as a huge gap.

In certain context capturing of Knowledge is not so much of a challenge as is the capacity to utilized at Knowledge pool in the right context organization at a times fell to provide right opportunities to enhance competitiveness and retain the Knowledge pool. Keeping this as a background.

The objective of study is to look into the Knowledge Management system process, problems and challenges faced by the organization and possible solution that are being tried to resolve. Newly emerging Knowledge centric organizations.

KM is the development of tools, processes, systems, structures and cultures explicitly to improve the creation, sharing and use of Knowledge critical for decision making. The effective use of KM helps organizations to improve the quality of their decision making and correspondingly to reduce costs and increase efficiency. Most automotive Original Equipment Manufacturers (OEMs) have made some attempt at KM initiatives, and these attempts have been well documented. However, among the automotive component suppliers, limited evidence exists of attempts at KM.

1.3 Problem statement

To know and understand the current Knowledge Management Practices in Automobile components manufacturing industry and where there are barriers in implementation of KM practices.

1.4 Objectives of the study

Objectives of the study covering mainly domain of KM, KM practices, new products and new services as an outcome of KM practices and improvement in production process.

Thus, the following are the objectives :

01. To know and understand the adoption and use of Knowledge Management Practices in Automobile Industry.

02. To study the IT tools used for implementation of Knowledge Management Practices in Automobile Industry.

03. To study the influence of Knowledge Management Practices on additions of new product or new services.

04. To study the impact of Knowledge Management Practices on improvement of Production Process.

05. To collect data and analyze for the purpose of study.

1.5 Formulation of Hypotheses :

The hypothetical statements in any research are generally considered as learned opinion, for begin a statement as learned opinion it has to get backed up by a series of observations, experiments or a good and sound amount of literature review.

The researcher have made full efforts which are manifested in LR chapter has significantly helped to formulate the hypothetical statement.

In addition to LR an interview was conducted by the researcher of "General Manager, Controlling, Mercedes-Benz, Mrs.Anita Khisti".

The interaction and discussions brought to surface certain points regarding IT implementation process, tools, barriers, innovation, improvement in production process leading to new products and services.

The interaction during interview and replies also assisted the researcher in formulation of hypotheses.

IT implementation is the crux of good execution of KM practices.

Hypotheses of the study

Null Hypothesis :

Ho : There is no relationship between IT implementation and KM Implementation.

Alternative Hypothesis :

H1 : There is significant relationship between IT implementation and KM Implementation.

Null Hypothesis :

Ho : Amongst barriers for implementation of Knowledge Management Practices, all the barriers are having equal magnitude of difficulty.

Alternative Hypothesis :

H2 : Barriers for implementation of Knowledge Management Practices exhibit difference in level of difficulty.

Null Hypothesis :

Ho: Addition of New products or services do not depend on the number and nature of Knowledge Management Practices.

Alternative Hypothesis :

H3: Addition of New products or services depend on the number and nature of Knowledge Management Practices.

Null Hypothesis :

Ho: Magnitude of Knowledge Management Practices is not a predictor of improvement in production process.

Alternative Hypothesis :

H4: Magnitude of Knowledge Management Practices is a predictor of improvement in production process.

1.6 RESEARCH METHODOLOGY

Research methodology explains the research design, sampling, secondary data, collection of primary data and method of research suitable to the context. Further it explains the statistical tools applicable to the context of the study.

The reader should appreciate the following paragraphs with reference to objective of the study and particularly, hypothetical statements.

Research Design

The context of the study is related to understanding of Management Practices, use of IT tools for implementation of the practices and level of difficulties. It as well makes an enquiry into new product development and improvement in production process.

Type of study :

Thus, it under takes the collection of facts regarding above points and further analyses them. This shapes the design as DESCRIPTIVE TYPE of the research design. Secondly, it describes the facts and the nature of practices, types of them and their overall implications on four major tenets of knowledge management i.e. knowledge Acquisition , Knowledge Sharing , knowledge Dissemination, Knowledge maintenance and storage.

The nature of study :

The study attempts to understand the practices of KM of automobile units. It is a quantitative study. These practices are the phenomena in the form of using different IT tools and non IT methods. The usage of this method is measured in terms of percentage. Regarding reasons and results of K.M. practices, five point scale is used. Thus, the nature of study is more over qualitative. The

primary data contains details about tools and methods. Inferences are drawn from responses to the same.

Population/Universe :

The study relates to manufacturers of automobile components in Pune. Majority of them are geographically spread over MIDC at Chakan, Bhosari, Pimpri, Chichwad. The directory of MCCI and A (published in 2008) shows that there are 630 units in Pune, engaged in manufacture of automobile components. The directory is available in CD form and it exhibits analytical information about Company, Category, Product/service, Address, legal Status, Investment Slab, Turnover slab, Certification , Exporter, with the search facility.

On search, it was noticed that 630 units, in Pune region are engaged in automobile components manufacturing and allied activities.

Table 1.6 Turnover Composition of domain auto component units.

Sr.No	Range of Turn over	No. of units	Percentage (%)
1	Below 25 lakh	139	22
2	25 lakh – 01 crore	215	34
3	1 crore – 20 crores	227	38
4	20 crores –100 crores	28	04
5	More than 100 crores	21	03
	Total	**630**	**100**

The above table depicts that there are 22% units which have turn over below Rs.25 lakhs. For the implementation of Knowledge Management Practices, certain IT tools are required which are very costly. Considering this fact and the turn over, these units although are belonging to manufacturing of auto components, are of very marginal importance, to be included in the population. Excluding these units the population/universe stands to 491 units.

Sources of Information :

The method of research follows sourcing of information from secondary data (about which detailed discussions are made in literature Review chapter)

Primary Data Collection is elaborated in sub seeding part.

Sample : Out of 491 units in order to have inclusion of all types of units, the following number of units are selected for the purpose of sampling.

Table 1.7. Selection of Sample units

Sr.No	Range of Turn over	No. of units	Sample units	Percentage %
1	25 lakh – 20 crore	442	50	12
2	20 crores –100 crores	28	18	65
3	More than 100 crores	21	15	70
	Total	**491**	**83**	**17**

From each category of turn over the units are selected. More than 10% are taken from first category. In the context of Knowledge Management Practices these units have similar circumstances and environment, for the purpose of Implementation of Practices. Here, the threshold is generally taken as 10%. Therefore, 12% of units are considered in a sample.

In case of second category there is expansion in terms of volume as well as IT and other tools used for practicing Knowledge Management. These units are more professional in using IT tools, less vulnerable to difficulties, conducive for new product development and improved production process as compared to first category. Therefore, 65% are chosen which is 15% more than normal threshold of 50%.

In case of third category, 70% of the units are selected since they are most likely to have more number of practices, more advanced IT tools, having more conducive environment for practicing Knowledge management.

Thus, in entirety, 17% of the universe is covered by the sample which is above 10% of the threshold, taken as generally accepted sample size.

Thus, the sample represents appropriately the universe and makes it sound to analyze, infer, and conclude for providing reasonability to applying them to the universe.

Analysis of 75 units

Category 1) 47, Category 2) 18 , Category 3) 10

Procedure for selecting Sample units :

Survey method is used for the purpose of the study.

The units were selected on the basis of their turnover. The figure of turnover represents the aggregate effect of not only Knowledge Management practices but practices in all functional areas, as the effect of overall value addition. Categorizing them into three sections and covering them above general threshold and being the study is descriptive in nature **convenience random sampling** is used. The units were chosen randomly, when the researcher went to the field in MIDC area at Chakan , Bhosari, Pimpri, Chichwad. The procedure was sufficiently appropriate in order to cover the units which would throw light on KM practices since the turnover was the basis and random sampling has not diluted worth of the sample. The units were selected with the stratification of turnover range.

Primary data collection :

Knowledge Management is one of the intellectual areas in managerial functions. Higher the person in hierarchy more will be his contribution to the practices. Considering this fact the respondents chosen were supervisors and managers. They work at intersection of planning and implementation. At this point the application of KM is evident and significant.

For the development of the Questionnaire the Questions were drawn from the two models i.e OECD and APQC. About the model the details are mentioned in the beginning of Literature Review chapter under review of research papers.

Pilot Survey :

In order to finalize the questions with putting in more relevance a pilot survey was made. The units were mainly from Chakan area. The managers and supervisors were administered the questionnaire of 11 manufacturing automobile component units.

Therefore the Sample element is the manager and supervisor of the manufacturing business unit.

A Questionnaire was developed with reference to objectives and hypothetical statements. The Questions were linked with each other which is shown in

Appendix A.

Reliability and validity test:

The contents of following papers helped in conceptualizing and working of reliability and validity.

1] Joseph A.Gliem., Rosemary R.Gliem (2003) , Calculating, Interpreting and Reporting, Cronbach's Alpha Reliability Coefficient for Likert-Type Scales, Midwest Research to Practice Conference in Adult, Continuing and Community Education.

2] Chong Ho Yu, Arizona State University, An Introduction to computing and interpreting Cronhach Coefficient Alpha in SAS.

After collecting the responses the Questionnaire was subjected to the test for reliability and validity, the working results are shown as **Appendix B.**

Result of the Pilot survey and Revision:

The pilot Questionnaire was received well by the respondents and after their suggestions and the scrutiny of the questions, the questionnaire was improved on the following.

(Please refer final Questionnaire Annexed as **Appendix C**)

For the purpose of revision and finishing of Questions a reference of the Questionnaires following research papers were of great use.

Revision of the Questionnaire included, inclusion of certain areas, reframing of questions, reorganization of the Questions etc.

The summary is as follows :

1] The questionnaire was structured for four areas :

a) knowledge Sharing

b) knowledge Acquisition

c) knowledge Dissemination

d) knowledge maintenance and storage.

2] The questions regarding which IT instruments are used were posed with suitable examples of the tools for giving cues to the respondents.

3] Questions related to reasons and results are covered by Question no. 5 and Question no. 6. As they are qualitative in nature scale is used.

4] Respondents of pilot survey revealed many items of barriers for implementation of KM practices. Therefore in Question no. 10, barriers were included comprehensively.

5] Regarding knowledge acquisition, more elaborative question is included regarding the sources of knowledge management.

6] Overall reframing of questions brought in higher objectivity and suitability for the purpose of analysis.

Table 1.8 Summary of Questions with reference to area of KM Practices.

Sr.No	Area of KM Practices	Question No.
1	Knowledge Sharing	4.1
2	Knowledge Acquisition	4.2
3	Knowledge Dissemination	4.3
4	Knowledge maintenance and storage	4.4

Approach to analysis :

The nature of the study is descriptive it takes into account mainly the relationship between IT instruments and level of implementation of KM practices. Also it considers barriers for implementation, additions of new products or services, along with production process improvement.

Question wise analysis is planned. The summary of ways of analysis explains the approach.

Statistical package used :

The entire data is analyzed by using SPSS version 20. The package is very efficient and reliable but it offers number of results were from appropriate results are taken.

The Questionnaire contains the questions of varied nature. In case of Dichotomous questions, percentile measurement in carried out. For multiple choice questions, frequency distribution and percentile value are appropriate, Ratio scale is more suitable for the questions like where usage percentage

information is sought. Rank order is applied for Knowledge Acquisition question.

Question no. 4 exhaustively under takes the responses regarding various aspects of KM practices. The responses of these questions needs to be taken collectively for the purpose of analysis. This exercise depends on the selection of variables at different parts of the question. Spearman's rank co-relation is an appropriate measure. Being the Questions are having the nature of multiple choice, mainly for each individual variable is examined for its tenability by using skewness and kurtosis. It is seen that whether it falls within the range of threshold as recommended by Geogre and Mallery(2013) "SPSS for windows step by step a simple guide and reference".

Result of Using K.M Practices is significant for its implications. Question in relation to this needs to be analyzed by using Simple Regression Analysis.

Barriers for implementation K.M Practices is the subject matter of hypothesis No.2. Here Three point scale is given for the response. For the analysis the most appropriate measure would be chi square test.

Above is the plan of using different statistical measures. Accordingly the analysis would be made and grouping of different variables is to be made subject to the responses.

The plan is sound as it has the support of appropriate size of sample, systematic pilot survey, testing of reliability and validity.

1.7 Scheme of presentation followed :

Chapter one: Introduction

This chapter gives an outline of the entire research by pointing out KM in general, About background of research, Auto companies in Pune, problem selected, Objectives, hypotheses formulated for the study, research methodology is used with regard to the undertaking of the research. It describes the study method and procedure used for the knowledge management practices in Auto component industry, scheme of presentation, limitations of the study and Conclusion.

Chapter two : Literature Review

It highlights the prior research done in the field. On the basis of Literature published pertaining to research title and reviewed gaps noticed in existing review articles. Part I will focus on Knowledge Management Theory and Part II will give emphasis on KM practices.

Chapter Three: Analysis of Data and Information

Summarization of Data, It focuses on the data analysis and data gathering techniques.

Chapter Four : Hypotheses Testing

Statistically the hypotheses are tested and results are produced.

Chapter Five : Summary of Findings

This chapter summarize the findings from the research study

Chapter Six : Conclusions and Suggestions

This final chapter provides a comprehensive list of suggestions for improvement of the knowledge Management practices in Automobile Component Industry. It also defines the limitations of research study and provides suggestions for the future research.

1.8 Limitations of the study :

1. This research is limited to the Pune region.

2. There are few issues in respect of tacit knowledge capture like rapid changes in the information technology because of limitation of information seeking.

3. The nature of auto components manufacturing belongs to derived demand as we find it in case of tyres, A/C system, electrical parts. OEM suppliers supply these components to the main manufacturer. Thus KM practices get divided into two levels. The context of the study relates to the subsidiary domain of manufacturing, posses difficulties in seeking responses for comprehensive understanding from KM practices point of view.

4. Knowledge Analysis (Intelligent agents, fuzzy logic, Neural networks) has not covered in the study.

5. KM culture is not in units in desired structure.

1.9 Conclusion :

This chapter has provided the basis on which this thesis is to be built. It clearly outlines the research objectives and the hypotheses which are to be tested during the course of the thesis and provides the basic methodology

which is to be adopted. The following chapter will provide the review of literature pertaining to the developed research topic.

Chapter II

LITERATURE REVIEW

Every research needs a good support of review of literature. It helps in formulation of objectives and hypothetical statements. It is useful for getting the clarity about different concepts related to the domain and the topic. Further, the researcher can build the context of the study and the scope of the study.

While reviewing the literature, the process of elimination took place as it examined the relevance of the study.

The following is the account of various sources of literature review. The efforts have been taken to review the literature critically and creatively. Researcher has received a lot from this exercise and it has helped her to use it in various chapters of this work. Volumes of information is available to knowledge management practices. However, while reviewing the literature in light of context of the study i.e mainly practices related to sharing, acquisition, dissemination and maintain/storage which are major elements of the consideration. Most of the literature talks about above aspects and the root success factor i.e IT instruments for its implementation. In order to have the proper order with reference to the context the review contents where tabled in the following format:

Appendix D : Indicative table of contents of Literature Review

Sr. No	Year	Source	Title	Author	Contents	Remarks

A] Glossary of terms : Before going for regular literature review, the researcher felt it essential to understand the different terms used in the context. In order to grasp them google search is used and a list of t terms is sought. Professional firms have them in a repository form.

For the purpose of ready reference, a list of key terms relevant to the context is appended as -

Appendix E, Select key terms about the domain of knowledge management.

B] Books : What have been received from the books is stated below.

-Awad Elias M, Ghaziri Hassan M.(2003) Knowledge Management, Pearson Education.

1. What is Knowledge Management – KM is a newly emerging, interdisciplinary business model that has knowledge within the framework of an organization as its focus. It is rooted in many disciplines, i.e business, economics, psychology and information management. Knowledge management involves people, technology and processes in overlapping parts.

2. Why Knowledge Management? By sharing knowledge, an organization creates exponential benefits from the knowledge as people learn from it. This makes business processes faster and more effective and empowers employees in a unique.

3. Several key drivers are:- Technology drivers, Process drivers, Personnel Specific drivers, Knowledge related drivers, Financial drivers.

4. Four Process view of Knowledge Management – a) Capturing – Data entry, scanning, Voice input, Interviewing, Brainstroming

b) Organising – Cataloging, Indexing, filtering, linking, codifying

c) Refining – Contexualizing, collaborating, Compacting, Projecting, Mining

d) Transfer – flow, Sharing, Alert, Push.

5. KM System life Cycle – a)Evaluating Existing Infrastructure b) Form the Km team c) Knowledge capture d) Design KM blueprint e) Verify and

Validate the KM system f) Implement the KM system g) Manage Change and Rewards structures h) Post system Evaluation.

6. Nonaka's Model of Knowledge Creation and Transformation /SECI model, Knowledge Architecture is discussed which has different key layers.

7. Data Capturing tools and Techniques are introduced.

8. Knowledge Codification tools and procedures – knowledge maps, decision tables, decision trees, frames, production rules, case based reasoning, intelligent agent.

Research papers from journals were reviewed with preference to SMEs as the units under study are having SME profile.

C] Journals : Regular reading of the issues published in Journal of Knowledge Management (JoKM) has helped to conceptualize the subject matter of objectives, hypotheses and developing questionnaire for collection of the primary data and facilitating interaction with research elements during the field work.

The following lines are the stock of different concepts and contents related to:

Part I : KM Theory

a) Elements of sphere of Knowledge management
b) Forms of KM
c) KM enablers
d) KM and Critical success factors
e) Discrepancies

Part II : KM Practices

f) KM implementation barriers
g) Communication modes
h) SECI model
i) ICT and storage media
j) General concepts

a) Elements of sphere of Knowledge management

According to the Anthony Liew (2007) [1] Data are recorded (captured and stored) symbols and signal readings. Symbols include words (text and/or verbal), numbers, diagrams and images (still or video) which are the building blocks of communication. Signals include sensor or sensory readings of light, sound, smell, taste and touch.

Data are unorganized and unprocessed raw facts.

Information is a message that contains relevant meaning, implication, or input for decision and or action. Information comes from both current (communication) and historical (processed data or 'reconstructed picture') sources. The purpose of information is to aid in making decisions and or solving problems or realizing an opportunity.[Anthony Liew(2007)]. The word information is derived from the word inform, which means "to give shape to", information means shaping the data to arrive at a meaning. Data is processed to get information.

Knowledge is the (1) cognition or recognition (know-what), (2) capacity to act (know-how), and (3) understanding (know-why) that resides or is contained within the mind or in the brain. The purpose of knowledge is to better our lives. In the context of business, the purpose of knowledge is to create or increase value for the enterprise and all its stakeholders. In short, the ultimate purpose of knowledge is for value creation.

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[1] Anthony Liew, Walden University, 2007, Understanding Data, Information, Knowledge and their Inter-relationships, Journal of Knowledge Management practice, vo. 8, No.2.

Knowledge has different meanings, depending on the discipline where it is used. Knowledge is 'human understanding of a specialized field of interest that gas been acquired through study and experience. It is based on learning, years of experience, thinking and familiarity with the problem area in the department, a division or in the company. Knowledge is derived from information and information from the data.

data ⟶ information ⟶ knowledge

Payare Lal and G.S Thakar (2007)[2], have explained the role of Software in Knowledge Management and offer their comments on types of knowledge. KM does not solve all problems as obstacles having nothing to do with the technicalities must be taken into account.

Types of Knowledge: Explicit Knowledge, Tacit Knowledge and Cultural Knowledge.

Explicit Knowledge: This is simple form of Knowledge, which is formal and easy to communicate document. This is the Knowledge of rationality i.e policies, rules, specifications and formulae. This is also known as declarative Knowledge or sequential. Tacit Knowledge: This is complex form of Tacit Knowledge, which lies most of time as implications. It has two dimensions, technical and cognitive dimensions. This is personal Tacit Knowledge, which lies in the human mind and hard to formalize, and often difficult to communicate. This is the Tacit Knowledge of experience, which is also known as simultaneous Knowledge.

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[2] Payare Lal and G.S Thakar,2007, Impact of Information Technology (IT) on Knowledge Management (KM) : A Study, Impact of Information Technology (IT) on Knowledge Management (KM).

Cultural Knowledge: It is the Knowledge which includes assumptions and beliefs that are used to understand, describe and explain the reality, well as conventions, value and significance to new information. These shared beliefs, norms and values form the framework in which organizational members, construct reality, recognize the new information and evaluate alternative interpretations and actions. (Banka Behari Chand 2001).

Brenda C. Ledford, Zane Berge (2008) [3], The author has explored the gap in tacit transfer research concerning virtual team environments, and has suggested a framework to reduce barriers and facilitate transfer. Author has also stated the parameters of knowledge management as knowledge creation, managing personnel and processes, storage of knowledge, retrieval processes and central to all is transfer. Explicit knowledge will be knowledge that has been transferred out of someone's head and now is contained in a storage able form (papers, products, digital documents, print, audio, etc).

Tacit knowledge is commonly referenced as the knowledge that is contained inside our heads and is therefore inexpressible. According to the researcher the explicit knowledge is a knowledge which can be easily available through books, journals, magazines which is easy to communicate. But the knowledge which resides in the human minds or brains is the tacit knowledge. Which is very hard to capture, and difficult to acquire. Which can be coded to documents that will be an explicit knowledge. Researcher has found out that KM has impact on technology but it is the overlapping concept of People, process and technology. It can also be Human, Organisational process and Technological factors. . KM is the Overlapping Outcome of People, Process and Technology. Lewlyn L.R Rodrigues, R.S Gayarhri,et.al, 2006 [4].

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[3] Brenda C. Ledford, Zane Berge, University of Marryland, Baltimore County ,2008, A Framework for Tacit Knowledge transfer in a virtual team environment, Journal of Knowledge Management practice, Vol.9, No.2.

[4] Lewlyn L.R Rodrigues, R.S Gayarhri,et.al, 2006, Empirical Study Based Evaluation of KM Models in the IT Sectors : Implications for Quality Outcomes, Journal of Knowledge Management Practice, Vol.7, No 3

Primus Knowledge Solution, (2002) [5] According to this white paper there are Six best practices.

1. Make Knowledge management a natural part of the workflow.

2. Provide access to the most relevant Knowledge available.

3. Obtain the support of key managers from the top down.

4. Address the cultural change that Knowledge management implies.

5. Recognize and reward the efforts of Knowledge participants. Incentives, rewards and recognition can take many forms – executive acknowledge at company meetings, publication in the organization's newsletter, movie tickets, dinners out and public charts tracking participation. Whatever the organization decides, incentives and rewards should be of real value to the recipients and visible to senior management.

6. Monitor performance and analyse results for continuous improvement. According to the researcher, Knowledge Sharing should be the daily routine, in fact this research paper has an example of call center there is no existing solution, and the level 1 agent informs the problem to the higher level agent using the enhanced problem description by the level 1 agent. The expert agent troubleshoots the problem provides the solution and commits it to the knowledge base for access by level 1 agents next time the problem arises. As a best practice each step is combined with standard task that each agent would have done any way to solve the customers problem. Solutions could be drafted, developed and quality checked within the workflow and simultaneously made available for access and reuse –Angela McAllister, Manager of eServices and Knowledge Technologies, 3Com.

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[5] Primus Knowledge Solution, 2002, White Paper, Knowledge Management Best Practices.

KMS must have the ability to extract information from a wide selection of sources in wide variety of file formats, they can make use of ICT , the tacit knowledge available to the Industry should be made available to the right person at the right time to solve any problems, Organisational hierarchy should have the high position, Culture should be maintained, on the basis of the employee performance the reward and recognition for the efforts should be given and for the continuous improvement performance checking and analyse the outcomes are necessary. Keyvan Shahgholian and Hamid Hajihosseini, (2011)[6] has given primary model of the research : The relationship between knowledge (knowledge Acquisition, knowledge Application, knowledge Sharing, knowledge Expansion, knowledge maintenance and knowledge Recognition and customer satisfaction. They have designed a model were the level of Knowledge management is assessed.

These factors are recognizing knowledge, acquiring knowledge, application of knowledge, sharing of knowledge, expansion of knowledge and maintenance of knowledge. Each of these factors needs to posses specific features to be helpful to the improvement of knowledge, and accordingly knowledge management, in that organization.

This model helped the researcher to form factors such as knowledge capture, knowledge sharing, knowledge dissemination with the means of technological tools, knowledge maintain and store.

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[6] Keyvan Shahgholian and Hamid Hajihosseini, 2011, Designing a model for evaluation of Knowledge management level in industrial organization of Iran (Auto Industry) , African Journal of Business Management Vol.5(2),pp,332-339.

According to Maen Al-hawari, 2007,[7] The four knowledge management styles (Adoption, Systemisation, Standardisation, Articulation) are significantly different.

Brenda C. Ledford, Zane Berge, (2008)[3], According to the author this paper is to explore the gap in tacit transfer research concerning virtual team environments, and suggest a framework to reduce barriers and facilitate transfer. KM has many contexts and parameters including knowledge creation, managing personnel and processes, storage of knowledge, retrieval processes and central to all, is transfer. Author adds that explicit knowledge will be knowledge that has been transferred out of someone's head and now is contained in a storage-able form (papers, products, digital documents, print, audio, etc.).Tacit knowledge is commonly referenced as the knowledge that is contained inside our heads and is therefore inexpressible. Abou-Zeid (2004) identifies four types of tacit knowledge : embrained (know that), embodied (know how), embedded and encultured. Each is dependent on ability or context and can be shared, but universally is hard to convey. Tacit knowledge is defined as the innovative concepts and functions that internally exist within individuals prior to transfer.

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[7] Maen Al-hawari, 2007, The Importance of the four knowledge Management Styles to Industry:Using the HSD Post Hoc Test, Journal of Knowledge Management Practice,Vol.8, No 3

The **barriers and obstacles** to tacit transfer exist across organizational levels. A bottom-up analysis reveals that individuals become barriers to transfer when they hoard knowledge and resist collaboration. Mostafa Jafari, Peyman Akhavan, Ashraf Mortezaei (2009) [8] has focuses on Knowledge Layers and Architecture of a centralized KMS.

The Knowledge Management layers are maintaining Knowledge Management, Information Technology, Knowledge Management System, Human Resource, KM architecture, KM strategy, Leader at the top.

According to the researcher [8] layer one is the user interface with the help of web browser or any other software installed on each user's PC, for authentication and security purpose passwords are given, this is the authorized access layer with focus on the use of the Internet, Intranet are the part of the technical infrastructure of the KM system. A company's intranet is the internal network of communication systems modified around the Internet. It is a way of thinking about how people in a business work and transfer knowledge.

Layer three is the collaborative intelligence and filtering layer within a KM system. It provides customized or personalized views based on stored knowledge. It is designed to reduce search time for information by the user. Intelligent agents are probably the best contribution that AI has made to the web. An Intelligent agent is an active object that can perceive, reason, learn from past mistakes and act in a situation to assist in problem solving. Intelligent agents are not real agents, they do not knowingly cooperate or share in problem solutions. They must be programmed to do things.

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[8] Mostafa Jafari, Peyman Akhavan, Ashraf Mortezaei, Iran University of Science and Technology, Tehran, 2009, A Review on Knowledge Management Discipline, *Journal of Knowledge Management practice, vo. 10, No.1,* Framework and model for KM Implementation.

Layer four is knowledge enabling Application layer : The knowledge base, yellow pages, skills directories, videoconferencing, decision support system tools most of these applications allow users to do their jobs in a better way.

The final outcome is to show how knowledge sharing could improve the employees and the organization. The next layer is the transport layer which include the LANs, WANs (email, Internet/web site, TCP/IP protocol to manage the traffic flow of data. Middleware Layer contains a cluster of programs to do that job- to provide connections between legacy applications and existing and new systems, it makes a bridging between old and new data formats.

The bottom layer in the KM architecture is the physical layer where repositories are installed. These include data ware houses, operational databases. Each repository has a structure appropriate for the type of knowledge stored.

According to Naim Ahmed et. al (2004) [9] quotes " Getting the right knowledge to the right people through right processes by utilizing efficient IT infrastructure". Three pillars of Knowledge management are people, process and information technology. KM is the overlapping process of human , organizational process and information technology.

Knowledge Management and Technology

Knowledge Management requires an IT infrastructure that concentrates the collection, sharing of Knowledge as well as software for distributing information for the betterment of the organization. For Knowledge acquisition the technology used is search engines and networks.

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[9] Naim Ahmed, Anirban Chakrabarty, Parkha Kaul, 2004, Knowledge Management: Areas to Focus and Challenges Ahead, Academy of International Business (AIB), India, 4th International Conference on Globalization and Sectoral Development, Components of Knowledge Management (Overlapping people, process and Information technology)

For Knowledge storage the technology used is Databases, Data warehouse, File systems. e-mail, voice mail, digital answering system, groupware, intranets are used for Knowledge sharing. Office systems, electronic brochures, web publishing are used for Knowledge Dissemination. This was the IT infrastructure to facilitate Knowledge Management

The various techniques involved in Knowledge Management are expression management, text management, hypertext management, database management.

The author Priti Jain (2009) [10] defines Knowledge management as a focused management process to capture, exploit, share and apply both implicit and explicit knowledge for the benefit of the employees, organization and its customers.

The Hafizi Muhamad Ali, Nor Hayati Ahmad (2006) [11] addresses the benefits at two levels : individual and organizational. At individual level, KM provides employees an opportunities to enhance skills and experience by working in teams and sharing knowledge so that employees learn from each other, thereby improving personal performance, which leads to better career development.

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[10] Priti Jain, University of Botswana, 2009, Knowledge Management for 21st Century Information Professionals, *Journal of Knowledge Management practice, vo. 10, No.2,* Creating Knowledge Management awareness within the organization.

[11] Hafizi Muhamad Ali, Nor Hayati Ahmad, University Utara Malaysia, 2006,Knowledge Management in Malaysian Banks : A new Paradigm, *Journal of Knowledge Management practice, vo. 7, No.3.*

At the organizational level, the benefits are :

- Improving the organization's performance through increased efficiency, productivity, quality and innovation. Organizations that manage knowledge claim higher rates of productivity. By having greater access to their employees' knowledge, organizations make better decisions, streamline processed, reduce re-work, increase innovation, have higher data integrity and greater collaboration (CIO Council, 2001).
- Increasing the financial value of the organization by treating people's knowledge as an asset similar to traditional assets like inventory and capital facilities (U.S Department of Navy, 2001).

Ashutosh Roy, eGain Communications, (2009) [12] Six Best Practices – 1. Quantify value. Best practice ; Make sure the metrics you use are aligned with business objectives. For instance, if your main business goal is to increase upsell and cross sell through knowledge enabled contextual offers, reduction in call handle times will be a conflicting metric. As you assess ROI, keep in mind that KM delivers positive ROI in areas such as : Increase in first time fixes and revenue through upsell and cross-sell and Reduction in escalations, transfers, repeat calls, call handle time, training time, unwanted product returns, field visits and staff wage premiums.

2. Build the right team – Successful KM implementations start with the right team for knowledge capture and creation.

Best practice : Build a cross-functional team that can bring a 360 degree approach to knowledge creation. Best practice teams typically include – a) Lead expert : individual who decides how the KB will be organized, which topics will be covered, what the roles of various people in the team are and plans for maintenance and use. b)Users – high performance contact center agents who provide suggestions. c) Knowledge authors : individuals who are trained to use authoring tools and d) Project manager : individual who keeps the project on track.

3. Avoid Swiss cheese syndrome – Ambitious deployments almost always result in a KB that is solid in places, but full of holws, like a slice of Swiss cheese. This is a recipe for failure, because if users can't find the answers, or get inadequate or wring answers, they will quickly stop using the system.

Best practice : Focus on depth and quality rather than breadth. For instance, if an enterprise sells printers, scanners and copiers, the best approach would be to cover one product line thoroughly first.

4.Maintain velocity.

A classic mistake in KM implementations is not making midcourse adjustments to keep the project on track.

Best practice: If the deployment appears to be falling behind schedule, narrow the scope of the KB and finish on schedule. In fact, it is better to widen the scope later to expand the benefits of the deployment. As a rough guide, a typical enterprise deployment should not take more than three months after the initial planning, with three or four full-time people engaged. Deployment includes software installation, knowledge gathering and testing both the quality of the KB and system performance.

5. Balance "ivory tower knowledge" with street smarts. Enterprises often make the mistake of relying solely on internally focused domain experts who rarely speak to customers. It is sometimes difficult for experts to get down to the level of ordinary customers who may not know technical terms such as whether their mutual fund is "no load", "front-loaded" or "back-loaded". Using jargon in questions posed by agents or self-service systems is a guaranteed way to increase escalations.

Best practice: Find KB contributors that are both technically competent and not too far removed from customer contact. Successful customer service depends as much on the questions posed to customers as the answers.

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[12] Ashutosh Roy, eGain Communications, 2009, Knowledge Management for "Stand-Out" Customer Service, *Best Practices in KM for Customer Service*,

6. Provide flexible content access. People have different ways of finding information, or the same person may use different methods to suit the situation. A flexible approach to information access dramatically improves user adoption and ROI. For instance, novice agents, whether they are in-house or outsourced, may find it difficult to wade through hundreds of search hits to find the right answer, but may fare better if they are guided through a dialog, powered by an inference engine. On the other hand, experienced agents may prefer to quickly process search hits.
Best practice**:** Provide users multiple ways to access information—FAQ, browse, search and guided help. The key here is to make sure that the KB remains the same and there are no content silos.

According to Moya K.Mason [13] the Knowledge Management Types are :

1. Competency management is one of the fastest growing areas of knowledge management. It focuses on displaying information in sophisticated ways to understand labor trends and compensation. Telecommunications giant L.M. Ericsson in Sweden has already embraced the idea of tracking skills and competencies throughout its organization. The company has used knowledge management to post consistent performance gains throughout the 1990s.

2. Another type of KM that is attracting attention is knowledge sharing. A growing number of firms use Intranets and online forums to spread knowledge. Glance into the inner workings of Buckman Laboratories and you can get an idea of how knowledge can flow in every direction and how each person can become a willing participant in the program.

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[13] Moya K.Mason, Knowledge Management : The Essence of the Competitive Edge , Why KM?

3. Competitive knowledge management is yet another area of KM that blends competency management and knowledge sharing. Since Arthur Andersen's Atlanta-based business consulting division established an Intranet two years ago, consultants at the firm post knowledge workplans, methodologies, research, proposals and resumes, so that others in the organization can tap into high-level expertise on an as-needed basis. It's called: not reinventing the wheel logic.

According to Kevin C.Desouza and Yukika Awazu, (2008)[14], narrates, "SMEs compete on their know-how and hence have to use knowledge to their advantage, even more so than traditional resources." SMEs are judged by the external world, such as lending institutions, investors, suppliers and customers on their knowledge and knowledge exploitation capabilities. SMEs do not manage knowledge the same way as larger organisations. Since SMEs are resource constrained, and cannot spend efforts to create knowledge, they look outside the organisation for knowledge.

The researcher [14] has found out that there is need of external sources to create knowledge, it is fairly true that financial aspects are also important for the implementation of Knowledge Management. Yes, researcher agrees to the lagging of resources in the organisation.

K.Karthikeyan & R.Rengaraj,2010, [15] presents KM as a combination of five specific process. These are 1.Knowledge sharing and distribution 2. Knowledge generation and development 3. Knowledge codification and storage 4. Organisation leader roles and 5. Rewards systems. The importance of training based on competency gap, SAP and R& D for enhancing the knowledge of employee's is pointed out.

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[14]Kevin C.Desouza and Yukika Awazu, 2008, Knowledge management at SMEs: five peculiarities, Journal of Knowledge Management, Vol.10, No 1,pp.32-42

[15] K.Karthikeyan & R.Rengaraj,2010, Impact of Knowledge management practices in Indian Automobile Industry- An Empirical Investigation, International Journal of Information Technology and Knowledge Management July-Dec 2010 Vol 2 No 2 pp 627-631

b) Forms of KM

According to Geoff Turner and Clemente Minonne (2010) [16], Organisational Knowledge management (OKM), Organisational Learning Management (OLM), Intellectual Capital Management (ICM) these three pillars needs to be considered when translating corporate strategy into contextual KM targets. The four forms of integration are given Cultural integration, Methodical integration, Procedural integration and organization integration. Four forms of KM integration:-

1. Cultural integration allows KM to become an integral part of the overall organizational culture. It encourages the organization knowledge exchange and its application with high value esteem and can therefore be conveyed systematically. Some common practices in this field are after action reviews, job rotations and communities of practice.
2. Methodical integration attempts to integrate human and system oriented KM practices into knowledge intensive work processes in such a way as to positively influence the org. performance in terms of quality, productivity and innovation gains. Some common practices are a)human oriented practices- communities of practice, job rotation, coaching, mentoring, after action review and story telling.b) technology oriented practices, including the likes of collaboration platforms, document management, yellow pages, skills inventories, expert systems, blogs and wikis.
3. Procedural integration: The aim of such practices typically lies in the implementation of continuous business processes, in the reduction of processing time and the avoidance of work redundancy.
4. Organisation integration endeavours to integrate KM into the organization structure and facilitate dedicated management of the organizational knowledge base. Some common approaches are centralization, de centralization, and responsibility centres (revenue, cost, profit and investment)

According to researcher Respondents do not have a defined KM strategy, KM strategy was founded from their overall corporate strategy. Subsequently, the participants were asked how actively KM was practiced in their organization. One third of the respondents reported not practising KM at all, Few of them they do KM practices but not in a structured manner. Very few of those are active in KM admitted to being unable to judge their performance because they have few or no measurement tools and lack the appropriate skills to develop them.

To understand the success of an organisation's activities in each of the recommended four forms of integration, it is essential to find key indicators that measure performance(KPIs) fall under two groups a) effectiveness (quality improvement or innovation gains) b) efficiency (productivity increase through improved business processes). An insight of the study is that organizations having a KM strategy and actively managing it focus particularly on the efficiency dimension as it can be operationalise more easily compared to the effectiveness dimension expressed, for e.g in new knowledge creation. KM enhances the organizational Knowledge Sharing and its application with high value and put in proper structure and system.

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[16] Geoff Turner and Clemente Minonne, University of Nicosia, Crypus, University of South Australia, Adel aide, Australia, 2010, Measuring the effects of Knowledge management practices, The Electronic Journal of Knowledge management Vol 8 Issue 1 pp 161-170.

c. KM enablers

Chong Hai sin, et.al(2009) [18] Four broad categories of KM enablers identified from the extant literature which are strategy and leadership, corporate culture, people and information technology. According to Choong Kwai Fatt and Edward Wong Sek Khin, (2010)[17]. There are eight types of success factors for implementing knowledge management systems :-

·The link to economic performance. This involves money saved or earned.
·Technical and organizational infrastructure. This refers to the level of involvement through technology and organizational infrastructure for the success of knowledge management project.
·Flexible knowledge structure: Finding the right balance of knowledge repositories to a project.
·Knowledge-friendly culture: Finding the aspects of a knowledge friendly culture.
·Clear purpose and language: Clearly defined communication and objectives are important for Success.
·Change in motivational practices: Incentives and rewards are important to motivate people.
·Multiple channels for knowledge transfer. This means providing opportunities for face to face contact as well as electronic forms of communication.
· Senior management support. This implies providing funding and other resources for the success of the Organization" (Moody and Shanks, 1999)

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[17] Choong Kwai Fatt and Edward Wong Sek Khin, 2010, The social technical view of knowledge management in Services Industries, Journal of social sciences 6(2) : 256-264.

d) KM and Critical success factors

Chong Hai Sin, Gerald Guan Can Goh, Uchenna Cyril Eze, 2009 [18] KM critical success factors.

-11 key components (chong, 2006) They consist of 1. Employee training

2. employee involvement

3. team working

4. employee empowerment

5. top management leadership and commitment

6. information systems infrastructure

7. performance measurement

8. knowledge friendly culture.

9. benchmarking

10. Knowledge structure

11. elimination of organizational constraints.

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[18] Chong Hai Sin, Gerald Guan Can Goh, Uchenna Cyril Eze, Multimedia University, Melaka, Malaysia,2009, Knowledge Management Enablers toward Successful New Product Development: A Case study in a Semiconductor Manufacturing Firm, Journal of Information and Knowledge Management, Vol 10,No.4.

Table 2.1 Summary Of Knowledge Management Enablers/Critical Success Factors
(Source: Chong Hai Sin, Gerald Guan Can Goh, Uchenna Cyril Eze, 2009 [16])

Author/s	*Enablers / Critical Success Factors*			
	Strategy & Leadership	**Corporate Culture**	**People**	**Information Technology**
Wong (2005)	Management leadership Management support Strategy and purpose Organization structure	Culture	Motivation aids Training HRM	IT
Chong (2006)	Management Commitment	Knowledge friendly culture	Training Involvement Team working Empowerment	IS Infrastructure
Bishop et al (2008)	Clear definition Business objective Champion Top level support	Integration	Support team Reward	IT
King (2008)		National culture Organizational culture Organizational climate	Team climate	
Lee et al (2000)	Organization structure	Collaboration Trust Learning	People skills Development	IT
Okunove & Karsten (2002)	Structure		People	IT infrastructure
Oltra (2005)	Strategy motivation		HRM practices Participative Cross functional	IT infrastructure Customization
Yeh et al (2006)	Top management support	Sharing culture	Training Learning channels Incentive	Digitization of document Speedy search
Singh (2008)	Leadership style		Employee effort	
Yu et al (2007)			Team activity Learning orientation reward	

-Corporate Culture - The importance of culture to KM is outlined by Lee and Choi (2000) who state that organizational culture should have several components with regard to knowledge:

(1) people have positive orientation to knowledge, (2) people are not inhibited in sharing knowledge, (3) knowledge management project fits with the existing culture. This is also a view held by other researchers who state that a culture, which achieves a best fit with an organization's KM practices, is one where the employees do not feel any inhibitions about sharing knowledge and it is also vital for an organization to develop an open and trusting culture.

e) Discrepancy in adherence to KM practices

According to Helen Gillingham, Bob Roberts, 2006 [19], A gap analysis is notified key shortcomings with the current KM approach, problem statement. Discrepancy analysis

Research	Company X	Researchers contribution
Approach Dixon (2000), Collison and Parcell (2002) discuss the need to have a core group of people to set up and promote knowledge management within the organisation. For example, people are needed to work out the knowledge map, moderate information that is put into Knowledge Assets and to champion the use of a 'Peoples Directory'.	There is no core team to capture and promote the sharing of knowledge.	There is no core team to capture and promote the sharing of knowledge
People Collison and Parcell (2002) and Davenport and Prusak (2000) refer to connecting people through communities of practice and face to face meetings, which may also include knowledge sharing events.	Regular project meetings are held at each key stage. There is a willingness to share information, but no time. The business units are not using communities of practice or attending regular KM sharing events.	Regular meetings are held at each key stage. Knowledge Sharing is not done on daily basis. The business units are not using communities of practice.

Research	Company X	Researchers contribution
Process Probst (*et al*, 2001) discuss linking KM to business goals so that KM initiatives can be measured. Blake (2004) and Blanch (2004) from TW and Costain respectively have aligned KM to business goals.	KM was not linked to the key business goals. However, Industry standard KPI's are used by the business units to set and measure objectives. Another business unit was using balanced scorecard.	Organisations are not using balance score card as a standard performance measurement tool.
Nonaka and Takeuchi (1995) refer to the socialization and externalization of tacit knowledge in order to spiral knowledge throughout the organisation.	Business units are recording project information but there is no clear procedure for the sharing and capturing of tacit knowledge.	Business units are recording project information but there is no clear procedure for the sharing and capturing of tacit knowledge.
Collison and Parcell (2002) refer to processes being kept simple and to introduce learning before, during and after.	Project stages are clearly defined and are consistent across business units. Meetings are embedded in the processes, allowing for the sharing of project experiences before (winning), during (mobilise & construct) and after (review) stages. Information is captured and stored in a non standard format.	Information is captured and stored in a non standard format.

Research	Company X	Researchers contribution
Technology Collison and Parcell (2002) and Davenport and Prusak (2000) refer to connectivity and the need for a common infrastructure to facilitate the sharing of information.	The implementation of a group intranet is helping to standardise the platform used for local intranets. Estimating and Design are using standard tools. However, project information is captured using a number of non-standard systems.	
Blake (2004) and Blanch (2004) discuss ways in which tacit knowledge can be externalised and shared by using communities of practice and a knowledge repository to capture lessons learned.	Not using communities of practice to capture knowledge. Lessons learned are captured in an ad-hoc way at the close-out meeting. There is no group knowledge repository.	Not using communities of practice to capture knowledge. Lessons learned are captured in an ad-hoc way at the close-out meeting. There is no group knowledge repository.
Collison and Parcell (2002) and Davenport and Prusak (2000) refer to how people can be connected, such as; knowledge Maps and 'yellow pages' directory of who's who.	Knowledge maps are not used. The intranet provides a 'yellow pages' of who's who. However, this is dependent on uploading information from local directories used by the business units which are using non standard technology.	Knowledge maps are not used
Union Square Software (2003) discusses the use of collaborative tools by way of an enterprise portal. Davenport and Prusak (2000) promote the use of groupware, such as lotus notes.	Business units are not using enterprise portals or Groupware as collaboration tools.	
Skyrme (1999) and knight and Howe (2003) Refer KM tools as: 1. Discovery – data and text mining 2. Collect and codify using search engines and intelligent agents 3. Presentation using a	The group intranet uses a search engine for finding people and library photograph information. Document management systems are used for standard	No use of event or audio dairies

knowledge repository with databases and document management systems including data warehousing. 4. Collaboration tools, such as, groupware and video conferencing. Information classifications using taxonomies and meta data are used for documents and databases. Ontopia (2004) refer to topic maps which allows topics to have the same name, linking roles, products and procedures to the corresponding documentation.	forms and some project information. As discussed above there is no knowledge repository or groupware in use. Information classifications are used for the group intranet. There is no group standard for the business units when setting up local databases.	

Table 2.2: Summary of Gap Analysis

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[19] Helen Gillingham, Bob Roberts, 2006, Implementing Knowledge Management : A Practical Approach, Journal of Knowledge Management, Vol 7,No.1.

Part II

f) KM implementation Barriers

F. Tunc Bozbura (2007)[20] talks about the knowledge management culture of Turkish SMEs. He has shown one reason as barrier to knowledge sharing is that the managers are afraid of losing the control of knowledge. It also attempts to aim at finding out the senior managers' perception about the extent to which the components of KM contribute to the success of SMEs. The researcher came across the research model Organization for Economic Co-operation and Development Model (OECD) which categories the KM practices into four groups viz. 1. Communication 2. Training and mentoring 3. Polices and strategies 4. Capturing and acquisition.

The details of this grouping and other matter referred in the papers were applied while framing and grouping of the questions for the collection of the primary data. This paper contributed to straightening of the thought process to look at KM practices from a group dimension.

Manivannan Senthil Velmurugan, Kogilah et.al, (2010) [21] ,Problems are examined from three perspectives : that of the individual, the organization culture, and the technological tools used to support knowledge sharing in virtual teams. Author has found three main barriers faced by virtual teams.

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[20] F. Tunc Bozbura, in his paper titled Knowledge management practices in Turkish SMEs in 2007 published in Journal of Enterprise Information Management, Vol. 20 Iss: 2, pp.209 – 221.

They are : individual unwillingness, technological limitations and coordination problems and organizational and cultural differences. [22]Barriers to effective knowledge management Action research meets grounded theory [Case study], 2001, Global Co-operation in the New Millennium. Recommendations for action was Quality assurance – Improving documentation was asked to be make before and after the workshops, knowledge sessions or after solving the actual problem.

Standard templates should been defined and the quality of documents audited. Knowledge repository-It was strongly recommended that a central repository should be created allowing easy retrieval of relevant past design knowledge and the sharing of good practice.

Manivannan Senthil Velmurugan, Kogilah et.al, (2010) [21], KM barriers can be communication, cultural differences, technological limitations, lack of trust, information technology, financial, documentation, individual unwillingness (sharing knowledge)

The main challenges for practitioners include: - scanning multiple internal and external sources effectively; - meeting the diverse, dynamic, context specific information needs of individuals and groups of knowledge workers in real time; - capturing the knowledge that is generated when people use knowledge to do their jobs; - getting people to disseminate what they have learnt; - getting people to use knowledge that has been generated by others (overcoming the "not invented here syndrome" and getting people to trust and value the contributions of others). Non-disclosure agreements may also become an obstacle in the implementation of knowledge management systems involving multiple organisations as enterprises do not want to disclose their results to all participants of the virtual value creation chain.

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[21] Manivannan Senthil Velmurugan, Kogilah et.al, 2010, Knowledge Sharing in Virtual Teams in Malaysia : Its Benefits and Barriers, Journal of Information and Knowledge Management, Vol.9,No 2 pp145-159.

[22] The 9th European Conference on Information Systems.

g) Communication modes

Arntzen Bechina A.A, Buskerud Univerity (2010) [23] in his paper titled, "Success Factors in Implementing Knowledge Based Systems", The Electronic Journal of Knowledge management Vol 7 Issue 2 pp 211-218, KMS effectiveness are related to leadership, training, clear business strategy, aligning business goal with the technologies, collaboration and adaptive culture. Tacit knowledge is linked to intuition, emotions, beliefs, know-how, experiences and values. In Norway, regarding communication there are language barriers across the groups either within or across. Training and incentives, training is also a necessity for the successful implementation of KMS. Technology has several implications on the job skills, they can either upgrade or degrade skills. Incentives and rewards can also be used as an inducement for training and motivation.

Learning and training is essential in the adoption of the systems. Quite often top management or IT department are asking employee to use specific software but do not provide adequate training. Therefore, sometimes the systems implementation is proved to be a failure because people do not have the right skills.

Web 2.0 the dimension of interaction and participation is the core of their functionality. This is an important aspect that dictates the decision by management to invest in technologies. Kazuo Hasono, (2006) [24] Sharing Information is exchanged daily among members in network. Communication is core feature in small scale project.

One way to transfer the skills of good engineers is to create manuals; that is, to formalize their knowledge.

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[23] Arntzen Bechina A.A, Buskerud Univerity, Norway, Nkosi Ndlela Hedmark University College, Rena, Norway, 2010

[24] Kazuo Hasono, 2006, Application of Knowledge Management to System Development, Fujitsu Sci.Tech.J42,3p.364-368

ProjectWEB is a Web system that is the core tool for implementing SolutionNET activity. ProjectWEB includes various communication features such as bulletin board systems(BBSs) forums, and schedulers, but the core features are the ToDoList (To Do list) and the Library. The **ToDoList is a Web mail system** that enables users to know who has seen a message. When the message was opened, and when a request was completed. In addition, message recipients can add their comments to a ToDo message so project members can exchange information in the workplace. Project managers and project office members can comment about the members opinions, which ensures communication within the project. The Library is a place where the interim results of daily activities (tacit knowledge) are stored. It enables members to mutually review documents so troubles can be avoided at an early stage.

According to Cynthia Chin Tian Lee, Charles Egbu [25] - **Benefits** : With the increasing pressure for competitiveness on the construction organisations, it is necessary to capture, transfer and reuse project knowledge and use lessons learned from previous projects to improve project performance. Much of construction work is project-based, short-term and task-oriented; promoting a culture where continuous learning is inhibited. Specialist and technical knowledge is lost for one project to the next and arguably stifling an organisation's ability to develop knowledge and generate new ideas. In this knowledge driven global economy, knowledge itself can be seen as a commodity that offers the only 'true sustainable competitive edge'. If knowledge is effectively managed i.e. collected, structured and disseminated, it will bring significant benefit to organizations.

Suggestion to SMEs therefore must first know what their knowledge assets are then how to manage and make use of these assets to get maximum return.

Knowledge management can also promote innovation and business entrepreneurship help managing change, and emancipate and empower

employees (Nonaka and Takeuchi, 1995; Egbu, 2000b; McAdam and McCreedy, 2000; DTI, 2000).

Two more prominent definition of knowledge are tacit and explicit knowledge. Tacit knowledge as suggested by Nonaka and Takeuchi is hidden and cannot be easily represented via electronics whilst explicit knowledge is what can be captured and shared through information technology (Martensson, 2000). Further, explicit knowledge can be expressed in words and numbers and shared in the form of data, scientific formulae, product specifications, manuals, universal principles, etc. This kind of knowledge can be readily transmitted across individuals, formally and systematically. Also, it can easily be processed by a computer, transmitted electronically, or stored in databases.

Tacit knowledge is fragile and subjected to decay or loss if not passed on. Knowledge that required tacit exchange is often difficult to commodify and therefore may be considered of higher value (Shariq, 1999). In order for knowledge to become reproducible and useable, tacit knowledge needs to be transformed into explicit knowledge. This interaction between tacit and explicit knowledge can be fruitfully considered as a process of knowledge conversion and creation (Barrett & Sexton, 1999). While it is relatively easy to preserve and transmit explicit knowledge, tacit knowledge is more difficult to transmit. What is lacking at the moment is a complete understanding of effective knowledge transfer within organisations, especially where tacit knowledge is involved (Goh, 2002).

Suggestion Audio diary as a tool for capturing stories

Written diaries require writing skills and time for composition, which can act as barriers, especially to SME organisations. Audio dairies on the other hand can overcome these shortcomings and can be used in a manner similar to written diaries.

challenges participants faced in their knowledge capture process are identified as below:

Technology : SMEs are weak in specialised range of technological competencies

People : Communication barrier was mentioned to be a problem when dealing with people.

Although SMEs may have a less formal communication channel, the barrier of idea robbery still

exists; the fear that the idea of an individual employee could be taken by another who then gets the acknowledgement and rewards for that idea. Thus, there is a need for the protection of proprietary knowledge among employees and this hinders knowledge transfer and capture.

Audio Diary can be created using Rosoft Audio Recorder. This software can be downloaded

free of charge from http://www.downloads.com. To do a recording, the software is activated and a recording screen will appear on the computer. Users will need to plug in their Dictaphone and press the record button on the Rosoft Audio Recorder as well as on the Dictaphone and the events can be recorded and saved into to their company database. Upon creating the above said audio diary under different topic, it will be stored in the database where users can select to listen to the audio diaries of their colleagues and learn from their experiences by simply clicking the appropriate button on the relevant topic and the audio diary will be played. Next, to key in an event and create an event database, **Microsoft Access** is used for an illustration of the database.

Suggestion SMEs should adopt the policies and practices of the larger, more prosperous organisations and breakdown its resistance to change. Like large companies, SMEs should take action to capture and store the existing tacit knowledge within the company.

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[25] Cynthia Chin Tian Lee, Charles Egbu, et.al, Knowledge Management for Small Medium Enterprise : Capturing and Communicating Learning and Experiences.

h) Knowledge Sharing

Nour-Eldin Mohamed Elshaiekh and Peter Charles woods (2010) [26] says KM has an impact on organizational levels on processes, product, workers and general performance. The interrelated impact of KM on organizations are positive at several sectors. Due to KM there is a systematic and structured procedure to perform organizational processes. This research studies are focused on the Sudanese smes impact of KM. Workers are not capable enough to use automated tools to get required information.

A positive relationship between KM and the product, which shows that KM influences the product innovation and improve the product.

According to James Robertson, (2004) [27],Communities of practice and intranets- The approach 'Communities of practice' was developed by Etienne Wenger to explicitly recognize the importance of the less-formal knowledge sharing that occurs between peers, and within small groups. This has grown to be of major interest within the knowledge management community, and it has been used successfully within many organizations. Intranet play a valuable role in supporting the establishment and ongoing activities of a community of practice including building a 'home page' for the community of practice for establishing the identity of the group, providing a collaborative environment that can be used by community of practice members, especially those located in other offices, cities or states. Community of practice can be disseminated to the rest of the organization by a weblog.

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[26] Nour-Eldin Mohamed Elshaiekh and Peter Charles woods, Faculty of creative multimedia, 2010, Impact of Knowledge management on small and Medium sized organizations in **Sudan,** Journal of Knowledge management Vol 9 No 1, 2010 pp 41-53.

[27] James Robertson, 2004, Intranets and Knowledge Sharing, Using the Intranet to drive cultural change.

The research by S K Chadha and Deepa Kapoor, (2010) [28], indicated that although the companies acknowledge the benefits of KM, there still exist barriers in knowledge sharing. In this research around 53% of the executives believed that knowledge sharing is not being a part of daily routine work, was the biggest barrier in the implementation of KM, Internet /e-mail emerged as the most extensively used method for knowledge sharing, followed by Data management system and Decision support systems. knowledge and skills possessed by the employees of the org is considered as one of the most critical elements affecting the work performance of the company. However, only the existence of embedded knowledge is not enough for a company's good performance, the organisation need to create a culture of sharing this knowledge.

Figure 2.1 SECI *model of* Knowledge Creation.

Tacit to Tacit Socialisation Team meetings And Discussions	Tacit to Explicit Externalisation Dialog within team Answer Questions
Explicit to Tacit Combination Learn from a Report	Explicit to Explicit Internalisation E-mail a Report

Tacit to Tacit – Such knowledge sharing, transfer, or collaboration often produces no explicit knowledge. Experience among people in face-to-face business situations is shared, here technology plays minimal role. For e.g team members can conduct meetings, listen to presentations, or simply carry out discussions when they are geographically dispersed.

[28] S K Chadha and Deepa Kapoor, 2010, A study on Knowledge management Practices of Auto Component Manufacturing Companies in Ludhiana City, The ICFAI Journal of Knowledge management,

Tacit to Explicit – Online discussions can capture tacit knowledge and apply it to an immediate problem (Marwick 2001). The database becomes as repository of useful knowledge. After the knowledge has been made explicit and has been stored in a repository, persons facing a similar problem can consult the database at their convenience.

Explicit to Explicit – Explicit knowledge can be easily captured and transmitted to all. Technology plays a very important role.

Explicit to Tacit communication is taking explicit knowledge such as a report and deducing new ideas or taking constructive action. Creating technology to help users derive tacit knowledge from explicit knowledge is an important goal of knowledge management.[29][30]

According to Farooq Mughal, 2010 [32] he has shown Mapping Knowledge Creation, Sharing and Networking *, Nonaka's SECI model of* Knowledge Creation

'Ba' as a context or space can apply to contextually influencing factors such as cultures and other social environments [29][31]. These social, cultural and historical contexts are necessary for meaning to be derived and meaning to be associated with information.

In a Knowledge intensive world, organizations must develop their understanding for sharing of Knowledge and utilization of networks to achieve a competitive advantage.

-Knowledge Management will help to put Unorganized information into structured.

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[29] Mohammed S.Chowdhury, Zahurul Alam, 2009, ICT – Driven Knowledge Economy In Bangladesh: Issues and Constraints, Journal of Knowledge Management practice, vol. 10, No.1, SECI model.

[30] Khalid Samara, London South Bank University, 2007, A Framework for Discovering KM Forces : The Fifth Element, Journal of Knowledge Management practice, vo. 8, No.1. SECI model.

[31] Mattew Jelavic,Kristie Ogilvie, 2010, Cultural Perspectives on Knowledge Management in Central and Eastern Europe : The SECI Model of Knowledge Conversion and 'Ba', Journal of Information and Knowledge Management, Vol 9,No.2.

[32] Farooq Mughal, 2010, Beyond the tacit-Explicit Dichotomy: Towards a Conceptual Framework for Mapping Knowledge Creation, Sharing and Networking, *Journal of Information and Knowledge Management, Vol 11,No.2, Nonaka's SECI model of* Knowledge Creation.

According to Abdus Sattar Chadhry, (2005), [33] ,Knowledge sharing is central to the success of all knowledge management strategies. Effective knowledge sharing practices enable reuse and regeneration of knowledge at individual and organisational level.

Sharing - Chadhry and Ang(2001) found a considerable **duplication of efforts in knowledge capturing because of lack of knowledge sharing practices**.

- Barriers- Neo(2002) in a study of knowledge sharing practices in a company found that **cultural factors have significant impact on individual's decision to share or hoard knowledge.** His study revealed that lack of motivation, management support, trust, and teamwork spirit were considered as **major barriers to knowledge sharing**
- **Ang (2002)** There was a need to implement policies to assure employees that their value would not dissipate when they shared knowledge. It was suggested that appropriate reward mechanism should be put in place to strengthen these policies to create a climate of trust among employees.
- **Chua (2002)** pointed out that concerns for career advancement and performance appraisal were creating a mentality of fear called'kiasuism' deterring employees from sharing knowledge in organsiations. Such phenomenon was considered a major barrier to knowledge sharing
- **Chong(2003**) Knowledge sharing was taking place on informal basis through face to face communication and collaborative work groups.
- Abdus Sattar Chadhry, 2005 [33] says Compared to sharing knowledge through databases employees were willing to spend more time in sharing knowledge through face to face media., written communications were considered more effective than informal one to one encounters, emails, telephone conversions, and other informal means such as personal notes, chats or communication through electronic discussion groups.

[33] Abdus Sattar Chadhry, 2005, Knowledge sharing practices in Asian institutions: a multi-cultural perspective from Singapore, *World Library and Infromation congress: 71th IFLA General Conference and Council.*

- Knowledge sharing research in Singapore highlights the need for innovation and creativity to reap maximum benefits from knowledge management activities.
- Managers must be open to new ideas and capable of managing conflicting discussions and deliberations.

M.D.Singh, Ravi Shankar et.al, (2006)[34], The new world of knowledge based organizations is distinguished from the organizations of the last millennium by its emphasis on monitoring and controlling the organization by shared knowledge derived from **internal and external data sources.**

Pradorn Sureephong, Nopasit Chakpitak et.al [35] Sharing model of SECI. knowledge management and team learning theory could be useful tools to motivate and stimulate collaborative activities within the cluster. According to Nonaka's Knowledge creation framework [Nonaka and Takeuchi, "The knowledge creating company how Japanese companies create the dynamics of innovation', Oxford University Press, 1995]. The interactions between the explicit and tacit knowledge lead to the creation of new knowledge.

SECI model is as follows :

Socialization : From tacit to tacit this kind of Knowledge sharing is often done without ever producing explicit knowledge. Tools to support such as : e-mail, bulletin boards or brain storming.

Externalization : From tacit to explicit by its nature, tacit knowledge is difficult to convert into explicit knowledge. Tools to support such as : semantic network, knowledge ontologies or agent technologies.

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[34] M.D.Singh, Ravi Shankar et.al, 2006, Survey of Knowledge Management practices in Indian manufacturing industries.

[35] Pradorn Sureephong, Nopasit Chakpitak et.al, knowledge management System for Cluster Development in Small and Medium Enterprises

Combination : From explicit to explicit Explicit knowledge can be shared in meeting, via documents, etc. Tools to support such as : lesson learned database, tacking or data mining.

Internalization : From explicit to tacit In order to act on information, individuals have to understand and internalize it. Which involves crating their own tacit knowledge. Tools to support such as searching, document management or work flow system.

Brian Detlor, Umar Ruhi, (2006) [36], At a theoretical level, study provides empirical evidence to support the relationship between the culture and context of knowledge management practices in the organization and the information and knowledge sharing behaviors of its employees.

According to Raija Halonen and Elisa Laukkanen, Thomas Acton and Kieran Conboy, 2010, [37] Organisations do not only solve problems but also create and define them and thus they apply new knowledge when they solve the problems and gain new knowledge through the action of problem solving. Thus, knowledge is created continuously in a spiral of seemingly contradictive setting. Further, ba is not closed because all necessary contexts must be let in but despite that, ba must be sheltered from outside contexts so that its own context can evolve. A good ba gives the actors possibilities to be free of their daily routines and to externalize their individual knowledge (Nonaka and Toyama, 2003).

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[36] Brian Detlor, Umar Ruhi, 2006, The Effect of Knowledge Management Context on Knowledge Management Practices : an empirical Investigation, -Likert scale

[37] Raija Halonen and Elisa Laukkanen, Thomas Acton and Kieran Conboy, 2010, Unstructured Knowledge Transfer in ICT Teams, *Journal of Information & Knowledge Management, Vol.9, No 1.*

Identifying and acquiring knowledge is a key factor in KM. Some scientific tools used in these processes such as data mining, neural network, meta-heuristic model are so complex that most medium and small size companies managers avoid it in searching tacit knowledge and skills processes adds Jose Teba Fernandez, 2006[38].

David Skyrme, (2004) [39], He cited seven incentives : Hire people who will share, Develop trust, Vary motivations, Show public recognition, reorganize for sharing, create communities, develop leaders.

According to the contents it is perceived that, recruiting the employees through an intensive few days of interactive interviews. Developing trust regarding sharing will they misuse the knowledge, will the employees pass it off as his own without giving any acknowledgement or recognition as a source, vary motivations at three levels- senior executives, benefits for department and employees. Reorganise for sharing some appropriate mentoring programmes are used. To share knowledge - create communities, Develop leaders to promote knowledge sharing and develop training.

Three Cs of Culture, Co-opetition (a blend of co-ooperation and competition), and Commitment.

Changing Culture

Culture change is never easy and takes time. But cultures can be changed. Culture is defined in many ways, such as "commonly held beliefs, attitudes and values" (Institute of Personnel Development), "the collective programming of the mind that distinguished one group from another" (Geert Hofstede), and in many other ways that also embrace rituals, artifacts and other trappings of the work environment.

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[38] Jose Teba Fernandez, 2006, University of Seville, Sebastian Lozan Segura,Jose Luis Salmeron , Jesus Racero Moreno, University Pablo de Olavide at **Seville,** Operational Knowledge management Design in Total Quality Management: Small and Medium Size Companies, Journal of Knowledge management Practice,Vol.7, No1, March 2006.

Challenging Through Co-competition

Human beings are at the same time social cooperative beings and have a competitive streak. We all like to do better than our peers and excel in something. Yet, in today's complex world, we need help from them to achieve our aims. In an organization, lack of competition - both for individuals and teams - leads to complacency.

But competition must be done in a healthy manner. Some things to consider:

- In early stages of product development, don't simply approve one line of approach. Have several "competing" projects under way but make sure there are mechanisms to exchange knowledge and challenge / encourage each "runner" e.g. through people sharing, peer reviews etc.
- Continually benchmark internal processes and functions with other organizations and potential suppliers. Encourage them to strive for improvement through learning from each other.
- Introduce 'competitions', such as the "knowledge champion of the year", the "innovators team award", but invite everybody to the award ceremonies.
- Compete, not against other people or teams, but set goals vs. challenging targets or external competitors.

Commitment

This builds on the other two Cs. Organizations need to create a commitment to culture, to change, to challenge, to compete and cooperate. If, as is often the case, time pressure leads to poor knowledge sharing, then there must be a commitment to allow time for it to happen.

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[39] David Skyrme, 2004, The 3cs of Knowledge Sharing, Seven incentives in Knowledge Sharing

Seven Incentives for Sharing

- Hire people who will share - at Collective Technologies of Texas, the process starts with recruiting people through an intensive few days of interactive interviews;
- Develop trust - Buckman Laboratories nurtures trust through its ten point code of ethics in which employees are steeped;
- Vary motivations - CAP-Gemini Ernst & Young applies incentives at three levels: a solid business case for senior executives, relevant benefits for departments, and incentivizing positive behaviours with employees;
- Show public recognition - Harris has its "wall of fame" a gallery of pictures of employees who have excelled at knowledge sharing;
- Reorganize for sharing - Northrop Grumman uses integrated product teams, backed up by appropriate mentoring programmes;
- Create communities - The World Bank uses electronic bulletin boards focussed around relevant topics, but which cut across organizational boundaries;
- Develop leaders - Capital One formed a group from natural knowledge champions to promote knowledge sharing and develop training.

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[39] David Skyrme, 2004, The 3cs of Knowledge Sharing, Seven incentives in Knowledge Sharing

i) ICT and Storage media

IT tools for KM implementation play a critical role in KM process. Rajesh K.Pillania, (2008) [40] It is the facilitator and the enabler for the KM implementation. The contents of this paper are having in hypothetical statement no.2. According to S.Wadhwa, J.Madaan[41], Acquiring Knowledge about new technologies. Soga et.al(1999) illustrates information systems developed at Hitachi Corporation that uses Radio Frequency Identification (RFID) technology to store and retrieve information regarding product on an individual basis.

According to researcher communities are emerging in academic environment in manufacturing industries facilitated by emerging tools for knowledge sharing and management. Organisational repositories, digital libraries are to be practiced. Gayatri Doctor, (2006) [42], She has discussed about digital repositories.

According to the Chi-Lung Lee, His-Peng LU et.al, (2010), [43] due to the new era of Web 2.0 and the influence of highly interactive online information technology, internal management and knowledge application procedures are becoming increasingly complex.

It is true that Web 2.0 tools is very effective in knowledge management system.

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[40] Rajesh K.Pillania, 2008, Information Technology Strategy for Knowledge Management in Indian Automotive Components SMEs, Knowledge and Process Management Volume 15 No.3 pp 203-210.

[41] S.Wadhwa, J.Madaan, Indian Institute of Technology, Conceptual Framework for Knowledge Management in Reverse Enterprise System, *Journal of Knowledge Management practice, vo. 8, No.2.*

[42] Gayatri Doctor, 2006, Knowledge Sharing in Academic Institutions Technology for Sharing Research Output, CourseWare and Learning Resources, emerging tools for knowledge sharing are Digital Repositories , Digital Libraries. *The IUP Journal of KM. The ICFAI University Press.*

[43] Chi-Lung Lee, His-Peng LU et.al, 2010, A process based knowledge management system for schools : A case study in Taiwan, *The Turkish Online Journal of Educational Technology Vol.9, Iss 4.*

Qianwang Deng, Deji Yu, 2006[44] had stated many challenges in the implementation of KM they are:-

-Employees have no time for KM

-Organization's processes are not designed for KM

-difficulties when preparing and structuring the knowledge

-lack of understanding of KM and benefits

-current culture does not encourage knowledge sharing

-lack of measurement, motivation, rewards to share knowledge

-lack of acceptance by the employees

For more details there is an architecture available which is an example of Metadata of a Knowledge Item, given as Annexure F. Source : [44]

Dr.David Skyrme, (1998) [45] has given more focus on Information technology sharing. International best practice (Skyreme and Amidon 1997) two main thrusts were identified. The first is that of making better use of the knowledge that already exists within the firm, for e.g by sharing best practices.

The second major thrust of knowledge focused strategies is that of innovation, the creation of new knowledge and its conversion into valuable products and services.

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[44] Qianwang Deng, Deji Yu, 2006, An Approach to integrating Knowledge Management into the Product development Process, Journal of Knowledge Management Practice, Vol.7,No 2

- Some Key Technologies

The impact of each technology varies enormously from situation to situation. Several technologies recur in many knowledge management programs, partly because they

are generic and pervade many core activities and processes. The main ones are now briefly reviewed.

Intranet, Internet

The Internet protocols make it easy for users to access "any information, any where, at any time". Further, browsers and client software can act as front-ends to information in many formats and many of the other knowledge tools such as document management or decision support.

Booz Allen & Hamilton's *Knowledge Online* is an Intranet that provides a wealth of information (e.g. best practice, industry trends, database of experts) to their consultants world-wide. Through active information management by knowledge editors (subject experts and librarians) the information remains well structured and relevant.

Groupware - Lotus Notes

What groupware products like Lotus Notes add over and above Intranets are discussion databases.

Intelligent Agents

The problem of information overload is becoming acute for many professionals. Intelligent agents can be trained to roam networks to select and alert users of new relevant information. Additionally they can be used to filter outless relevant information from information feeds.

A related technology is that of text summarizing, which British Telecom have found can summarize large documents, retaining over 90 per cent of the relevant meaning with less than a quarter of the original text.

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[45] Dr.David Skyrme, 1998, Knowledge Management solutions – The IT contribution, IT technology sharing.

Mapping Tools

There are an increasing number of tools, such as COPE and IDONS, that help individuals and teams develop cognitive maps or 'shared mental models'. These have been used by companies such as Shell to develop future scenarios and resolve conflicting stakeholder requirements. In addition, other mapping tools, such as those found in Knowledge X, can represent conceptual linkages between different source documents.

Document Management

Documents, and especially structured documents, are the form in which much explicit knowledge is shared. With annotation and redlining facilities, they can become active knowledge repositories, where the latest version and thinking is readily shared amongst project teams. By using a document management system for the construction of the Thelma North Sea oil platform, AGIP reduced construction time by 9 months and reduced document handling costs by 60 per cent. Suppliers like Dataware are repositioning their products as knowledge management products and are also adding 'knowledge enriching' functionality.

According to the researcher KM processes can help organizations offer new products or improves products that provide a significant additional value as compared with earlier products. Value added products also benefit from Km due to the effect the latter has on organizational process innovation.

Joao Ferreira, Knowledge Management in Automobile Industry[46] , Automotive companies are focusing on the processes of delivering a new or updated high quality vehicle to the market faster and cheaper. One of the big problems in an OEM(original Equipment Manufacturing) is the exchange of information among the different applications and with suppliers in a safe way. Joao Ferreira proposed a knowledge repository to share and exchange information.

The knowledge repository is based on the specific domain ontology (study of something).

knowledge repository is used for managing the product – related knowledge, identification, creation, representation and distribution of knowledge for reuse, awareness and learning across an organization.

CBR tool and Rule Based databases are used in his research papers. Case Based Reseaoning is a problem solving paradigm that differs from other major AI approaches. CBR is able to utilize the specific knowledge of previously experienced, concrete problem situations(cases). A new problem is solve by finding a similar past case, and reusing it in the new problem situation. A second important thing regarding CBR is an approach to incremental, sustained learning, since a new experience is retained each time a problem has been solved, making it immediately available for future problems.

As Sara Bocaneanu, (2009) [47] talks about, the Eastern European Companies are using Enterprise 2.0 technologies. -Enterprise 2.0 technologies are being introduced to support cutting edge knowledge management in many companies.

The tools include social bookmarking, wikis and social authoring and the article examines how the software was introduced. Andrew McAfee, the proponent of the Enterprise 2.0 concept, created a website(Cases 2.0) to invite the participants in online communities from different companies to share their own experiences. The website has been active since June 2007, but to date it only contains 20 case studies which are sometimes quite hastily sketched.

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[46] Joao Ferreira, Knowledge Management in Automobile Industry.

[47] Sara Bocaneanu, 2009, Implementing Enterprise 2.0 knowledge Sharing Tools in An Eastern European Consultancy, Journal of Knowledge Management, Vol.10, No 2.

Steve Denning, Technology for knowledge management[48], Author has website for business and organizational storytelling. Electronic databases, audio and video recordings, interactive tools and multimedia presentations have become available to extend the techniques for capturing and disseminating content.

Reports of activities, minutes of meetings, memoranda, proceedings of conferences, and document filing systems maintained by organizations are traditional commonly used devices for recording content in paper format so that it can be transferred to others.

Author Naser Valaei and Kamarulzaman Ab.Aziz, 2012, [49] has given more stress on Web 2.0 technologies (blogs, wikis, social bookmarking). Internet speed is low in the region, some of them declared that knowledge sharing is perceived as a wrong business activity. High speed broadband is illegal in Iran due to some political issues, policy makers as an initiative for implementing KM. The companies are in need of high speed Internet as well as technological supports to companies.

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[48] Steve Denning, Technology for knowledge management, The website for business and organisational storytelling,

[49] Naser Valaei and Kamarulzaman Ab.Aziz, 2012, Awareness: A study of Knowledge Management Adoption amongst **Iranian** SMEs, Journal of Organisational Knowledge Management.

A Knowledge Management Architecture

The management of explicit knowledge utilizes four primary resources

- Repositories of explicit knowledge;
- Refineries for accumulating, refining, managing, and distributing that knowledge;
- Organization roles to execute and manage the refining process; and
- Information technologies to support those repositories and processes.

The Knowledge Repository

The design of a knowledge repository reflects the two basic components of knowledge as an object: *structure* and *content*. Knowledge structures provide the context for interpreting accumulated content. If the repository is conceived as a "knowledge platform", then many different views of the content may be derived from a particular repository structure. A high degree of viewing flexibility enables users to alter and combine views dynamically and interactively and to more easily apply the knowledge to new contexts and circumstances. At this point, knowledge-as-object becomes knowledge-as-process.

The basic structural element is the *knowledge unit*, a formally defined, atomic packet of knowledge content that can be labeled, indexed, stored, retrieved and manipulated. The format, size and content of knowledge units may vary depending on the type of explicit knowledge being stored and the context of their use. The repository structure also includes the schemes for linking and cross-referencing knowledge units. These links may represent conceptual associations, ordered sequences, causality or other relationships depending on the type of knowledge being stored.

To reflect the full range of explicit organizational knowledge, repositories should strive to record significant and meaningful concepts, categories, and definitions, (declarative knowledge), processes, actions and sequences of events (procedural knowledge), rationale for actions or conclusions (causal knowledge), circumstances and intentions under which the knowledge was

developed and is to be applied (specific contextual knowledge), and the linkages among them. The repository should be indexed according to those concepts and categories, providing access paths that are meaningful to the organization. It should accommodate changes or additions to that knowledge (e.g., by linking annotations) as subsequent authors and creators adapt the knowledge for use in additional contexts.

A knowledge platform may actually consist of several repositories, each with a structure appropriate to a particular type of knowledge or content. These repositories may be logically linked to form a composite or "virtual" repository, the content of each providing context for interpreting the content of the others. For example, product literature, best sales practices, and competitor intelligence for a particular market might be stored separately but viewed as though contained in one repository.

The Knowledge Refinery

The refinery represents the process for creating and distributing the knowledge contained in the repository. This process includes five stages:

- *Acquisition*. Information and knowledge is either created within the organization or can be acquired from many different internal and external sources.
- *Refining.* Captured knowledge, before being added to the repository, is subjected to value-adding processes (refining) such as cleansing, labeling, indexing, sorting, abstracting, standardizing, integrating, and re-categorizing.
- *Storage and Retrieval.* This stage bridges upstream repository creation to downstream knowledge distribution.
- *Distribution.* This stage represents the mechanisms used to make repository content accessible.
- *Presentation.* The value of knowledge is pervasively influenced by the context of its use. Capabilities should be provided for flexibly arranging, selecting, and integrating the knowledge content.

Knowledge Management Roles

A common weakness in knowledge management programs is the overemphasis on information technology at the expense of well-defined knowledge management roles and responsibilities. Traditional organizational roles typically do not address either knowledge management or the cross-functional, cross-organizational process by which knowledge is created, shared and applied. The architecture presented here suggests a set of organizational roles that should be explicitly defined. First, knowledge management, as a cross-organizational process, should be comprehensively "owned" and managed, and full-time responsibility assigned for an organization's knowledge management architecture. Organizations are creating a Chief Knowledge Officer role to handle this responsibility. Many organizations also cluster those responsible for knowledge management into knowledge or expertise centers, each being responsible for a particular body of knowledge. Their responsibilities typically include championing knowledge management, educating the organization, knowledge mapping, and integrating the organizational and technological resources comprising the knowledge management architecture. Additionally, explicit responsibility should be assigned for each stage of the refinery and the interfaces between them. Assigning responsibility for the seamless movement of knowledge from acquisition through use, as well as the interfaces between these stages, will help ensure that knowledge repositories will be meaningfully created and effectively used.

The Role of Information Technologies

The information technology infrastructure should provide a seamless "pipeline" for the flow of explicit knowledge through the 5 stages of the refining process to enable

- capturing knowledge,

- defining, storing, categorizing, indexing and linking digital objects corresponding to knowledge units,
- searching for ("pulling") and subscribing to ("pushing") relevant content,
- presenting content with sufficient flexibility to render it meaningful and applicable across multiple contexts of use.

Information technologies such as the World Wide Web and Lotus Notes™ offer a potentially useful environment within which to build a multimedia repository for rich, explicit knowledge. Input is captured by forms for assigning various labels, categories, and indices to each unit of knowledge. The structure is flexible enough to create knowledge units, indexed and linked using categories that reflect the structure of the contextual knowledge and the content of factual knowledge of the organization, displayed as flexible subsets via dynamically customizable views.

Effective use of information technology to communicate knowledge requires an organization to share an interpretive context. The more that communicators share similar knowledge, background and experience, the more effectively knowledge can be communicated via electronically mediated channels[(21)]. At one extreme, the dissemination of explicit, factual knowledge within a stable community having a high degree of shared contextual knowledge can be accomplished through access to a central electronic repository. However, when interpretive context is moderately shared, or the knowledge exchanged is less explicit, or the community is loosely affiliated, then more interactive modes such as electronic mail or discussion databases are appropriate. When context is not well shared and knowledge is primarily tacit, communication and narrated experience is best supported with the richest and most interactive modes such as video conferencing or face-to-face conversation.

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[50] Michael H.Zack, Managing Codified Knowledge, *Sloan Management Review,* Volume 40, Number 4, Summer, 1999, pp. 45-58

Benefits

According to Aditi Markale, 2011 [50],The most important benefit of knowledge Management to be learning from past experiences leading to avoidance of costly mistakes and saving the costs of reinventing the wheel.

The benefit was faster problem solving and response to issues as not it was possible to tap expertise/fruitfully use the experience available with the organisation.

Benefit of having KMS in their organisation was to avoid duplication of work, reduce learning time and improve the speed of implementation.

Knowledge is shared and transferred in their organisation through written/oral and visual reports, also educational and training programmes were found to be effective.

Mentoring is used by the organisation to transfer the knowledge. Organisations felt knowledge repositories worked for them.

Benefits of having a KMS in their organisations were faster product development times and increased innovation and collaboration, avoidance of duplication of work, reduced learning time and improves speed of implementation and better decision making.

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[51] Dr.Aditi Markale, 2011, A study of the Knowledge Management Systems in Software Dependent Organisations, Vishwakarma Business Review Vol I pg 73-77.

[52]Davenport T H and Prusak L, 1998, Working Knowledge : How Organisations Manage What they know, Harvard Business School Press, Boston. This research paper is used in Introduction.

D] Articles and Publications

-Annex 2: German Pilot Questionnaire., Knowledge Management in German Industry, in the Framework of the OECD Study. The parameters of the study where finalized.

- CFL OECD Knowledge Management Project Report – Danish pilot survey.

- Knowledge Management Practices at Toyota Motors.

-International tracking survey report 03, Knowledge management and Technology, by Thomas Riley, University of Glasgow (Sharing)

Davenport, T. and Prusak L. (1998), "Working knowledge: How organisations manage what they know", *Harvard Business School Press.*

E] Websites

- http://hsc.unm.edu/library/kmit

-http://www.knowledgebaoard.com/item/2917., KM best practices : Comparing apples to apples-Knowledge board APQC's (American Productivity Quality control) framework.

-http://www.nsftools.com/misc/WhatIsNotes.htm

-www.angelfire.com/pop2/tai/method.htm

- http://www.comintelli.com/Documents/Glossary_CI_and_KM for knowledge management terms.

The next Chapter speaks about execution of this method of research leading to analysis and findings.

CHAPTER III

ANALYSIS OF DATA AND INFORMATION

The sample details are given in the chapter one in table no. 1.7. The Questionnaires were administrated accordingly. Out of 83 units Managers/Supervisor of 75 units respondent. The break up was as follows-

Table 3.1 : Composition of responding units.

Sr.No	Range of Turn over	No. of units	Sample units	Responded units	Percentage %
1	25 lakh – 20 crore	442	50	45	11
2	20 crores –100 crores	28	18	18	65
3	More than 100 crores	21	15	12	57
	Total	**491**	**83**	**75**	**16**

Further, here after the analysis is made throughout 75 units.

Each question is cited and the analysis is given where from the inferences are drawn and comments are given.

1.. Are you aware of KM ?

(a) Yes (b) No

……

Inference: Managers/supervisors have answered very affirmatively about the awareness of KM. This did not affect the size of sample and it was valid to ask further questions to all the respondents. Thus the number of respondents stands as 75.

2.(a) Do you know any specific KMS ?

(a) E-Room, (b) Intranet (c) Internet

(d) Subodh (e) Microsoft Navigation ver 2009 ERP System

……

This question is posed for understanding the awareness about any or more of the different types of Knowledge Management Systems. This gives five variables. The frequency distribution is as follows.

Table 3.2: Composition of KM Awareness

	Responses		Percent of Cases
	N	Percent	
e-Room	53	24.2%	73.6%
Intranet	54	24.7%	75.0%
Internet	50	22.8%	69.4%
Subodh	3	1.4%	4.2%
Microsoft Navigation ver 2009 ERP system	59	26.9%	81.9%
Total	219	100.0%	304.2%

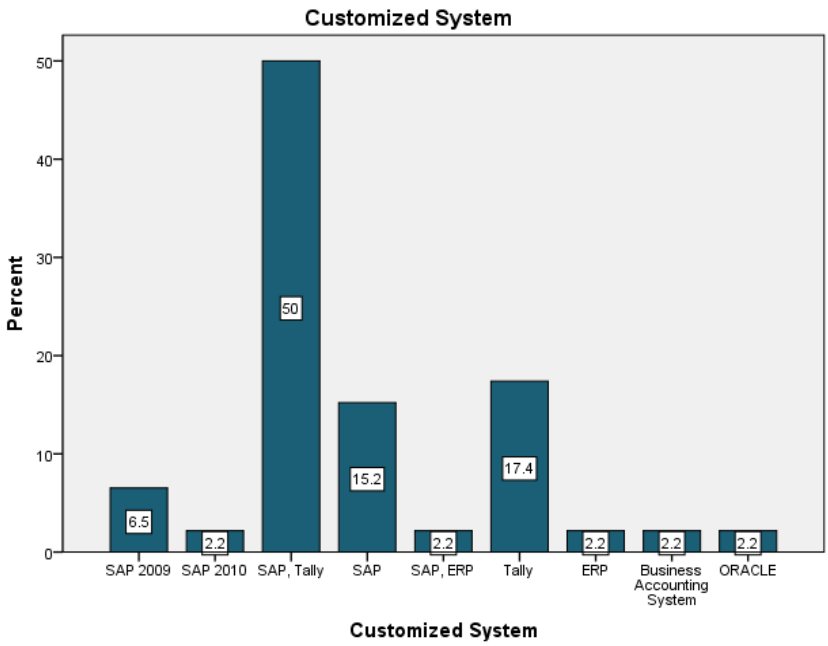
Inference : The figure 81.9% indicates high level of awareness about some of the KMS Within this Subodh is least preferred where as Intranet and e-Room are more preferred.

Comments : By and large the units are having some kind of KMS which makes the further responses more relevant.

2.(b) Please Specify if there is any customized system?

……

Graph 3.1:Distribution of customized system.



Inference : SAP and tally are the most widely used software tool for KMS.

3. Which of the following are key words used formally in KM ?
(Tick which is the key function)
(a) Knowledge Acquisition (b) Knowledge Mining (c) Knowledge Grooming

(d) Knowledge Creation (e) Knowledge Spread (f) Knowledge Sharing

(g) Knowledge enhancement (h) Knowledge Sharing (i) Knowledge Launch (##)

(j) Knowledge Capture (k) Knowledge Refinement (l) Knowledge Storage

(m) Knowledge Culturing (n) Knowledge Webbing (***)

(o) Knowledge In sighting ($$)
(##)-To being something such as a plan or introduce something new such as a product.

(***) – a complete and strong system of interconnected elements.

($$)- ability to understand the truth about something.
……

Table 3.3: Distribution of key words used formally in KM

Particulars of Key Words	Responses		Percent of Cases
	N	Percent	
Knowledge Acquisition	69	12.5%	92.0%
Knowledge mining	23	4.2%	30.7%
Knowledge grooming	34	6.1%	45.3%
Knowledge creation	46	8.3%	61.3%
Knowledge spread	46	8.3%	61.3%
Knowledge sharing	41	7.4%	54.7%
Knowledge enhancement	29	5.2%	38.7%
Knowledge sharing	45	8.1%	60.0%
Knowledge launch	7	1.3%	9.3%
Knowledge capture	49	8.9%	65.3%
Knowledge refinement	14	2.5%	18.7%
Knowledge store	56	10.1%	74.7%
Knowledge culturing	30	5.4%	40.0%
Knowledge webbing	33	6.0%	44.0%
Knowledge in sighting	31	5.6%	41.3%
Total	553	100.0%	737.3%

Above key words indirectly takes out the different areas of Knowledge Management Practices. The intention behind this question is to understand in which area they are selecting the key word as aware of so that there is a higher possibility that the units might have adopted some kind of practices in that area.

Inference : Out of 75 respondents, 92% means 69 respondents are well aware of knowledge acquisition. The least awareness is about knowledge launch. The range is between 1.3 to 12.5%. Thus above responses when scrutinized from indirect angle of probable areas of KM practices, the level is not satisfactory. This may be owing to certain difficulties, which are dealt with in forgoing part of the analysis.

4. **K.M.practices within your Organisation**

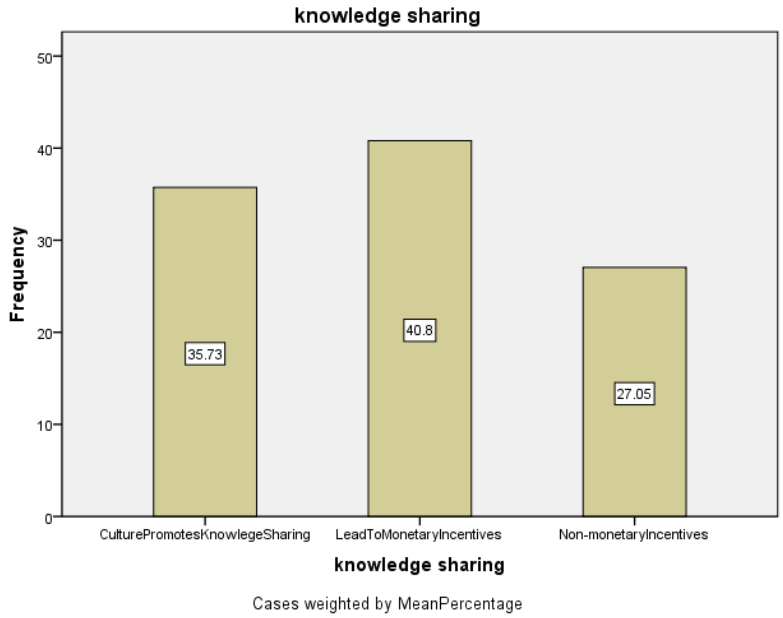
4.1 Knowledge Sharing (Check one response for each item)

Give proportion of usage in % of total application

Particulars	% of Usage	Plan to use in future
A. Culture in organisation promotes knowledge sharing		
B. promotion of knowledge sharing that will lead to monetary incentives.		
C. non-monetary incentives		

……

Graph 3.2: Mean Percentile of Sharing practices.



This Question having three elements about Knowledge Sharing practices.

A) Creation of Culture of working which would promote the sharing or enhance the level of sharing.

The analysis is based on mean of percentile which works to 35.73%.

Inference : The mean level is moderate as a KM sharing practice.

B) Some organizations offer monetory incentives or the purpose of enhancing KM sharing. The units under enquiry show mean percentage of this practice to the extent of 40.8%.

Inference : The figure of mean is little higher than A) but moderately satisfactory.

C) Here it comes to 27.05 which is too low.

84% of the units have some plans and intend to use these practices in future.

4.2.Knowledge Acquisition

4.2.1 Your organisation regularly Captures and uses Knowledge
(Give Number of following from where you capture Knowledge)

Particulars	**Number**
A. Industrial associations	
B.Competitors,	
C.Clients	
D.Suppliers	
E. Public research institutions	
F. Encourages workers to participate in project teams with external experts.	

……

Table 3.4: Order of Rank of Sources for Knowledge Capture.

Particulars	**Rank 1**	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**
A) Industrial associations	16	1.3	14.7	17.3	50.7	
B) Competitors,		28	32	29	6.7	4.3
C) Clients	10.7	26.7	44	6.7	5.3	6.6
D) Suppliers	32	34.7	6.7	5.3	4	17.3
E) Public research institutions	37.3	12	1.3	32	9.3	8.1
F) Encourages workers to participate in project teams with external experts.	4	1.3	0	8	22.7	64

(Values in the table are in percentage)

Inference : All the sources except F) are external. Employee participation is from within. The table shows that First preference is for Public research institutions.

Interpretation : From the above table it can be seen that 37.3% of the respondents have ranked Public Research Institutes as Rank 1, 32% have ranked suppliers as Rank 1, 16% have ranked as Industrial associations as Rank 1, 10.7% have ranked Clients as Rank 1, 4% have ranked Encourages workers to participate in project teams with external expert as Rank 1, 34.7% have ranked Suppliers as Rank 2, 28% have ranked Competitors as Rank 2, 26.7% have ranked Clients as Rank 2, 12% have ranked Public research

institutions as Rank 2, 1.3% have ranked Industrial associations as Rank 2, 1.3% have ranked Encourages workers to participate in project teams with external experts as Rank 2, 44% have ranked Clients as Rank 3, 32% have ranked Competitors as Rank 3, 14.7% have ranked Industrial associations as Rank 3, 6.7% have ranked Suppliers as Rank 3, 1.3% have ranked Public research institutions as Rank 3, 32 % have ranked Public research institutions as Rank 4, 29 % have ranked competitors as Rank 4, 17.3% have ranked Industrial Associations as Rank 4, 8% have ranked Encourages workers to participate in project teams with external experts as Rank 4, 6.7% have ranked clients as Rank 4, 50.7 % have ranked Industrial associations as Rank 5, 22.7% have ranked Encourages workers to participate in project teams with external experts as Rank 5, 9.3% have ranked Public Research Institutions as Rank 5, 6.7% have ranked Competitors as Rank 5, 5.3% have ranked Clients as Rank 5, 4% have ranked Suppliers as Rank 5, 64% have ranked Encourages workers to participate in project teams with external experts as Rank 6, 17.3% have ranked Suppliers as Rank 6, 8.1% have ranked Public research institutions as Rank 6, 6.6% have ranked clients as Rank 6 , 4.3% have ranked Competitors as Rank 6.

4-2.2 What are the practices that you as a user incorporate **to capture Knowledge?**
Give proportion of usage in % of total application

Practices to capture knowledge	% of Usage	Plan to use in future
A.Best practice		
B.Lesson learnt from previous job work		
C.Communication		
D.Cross project learning		
E.Global competition		

……

Analysis : For each variable, S.D, Skewness and Kurtosis are measured individually. The result showed that the figures so worked out are within the threshold range and it implied the assumption of normality is tenable.

The following graph shows the percentile of usage of variable practices. Knowledge Capture is done by following a)Best practice b) Communication and c) Global Competition, in the percentage mean range of 20% to 30% . Capture through Lesson learnt from previous job work and Cross project learning is less than 20%.

Comment :

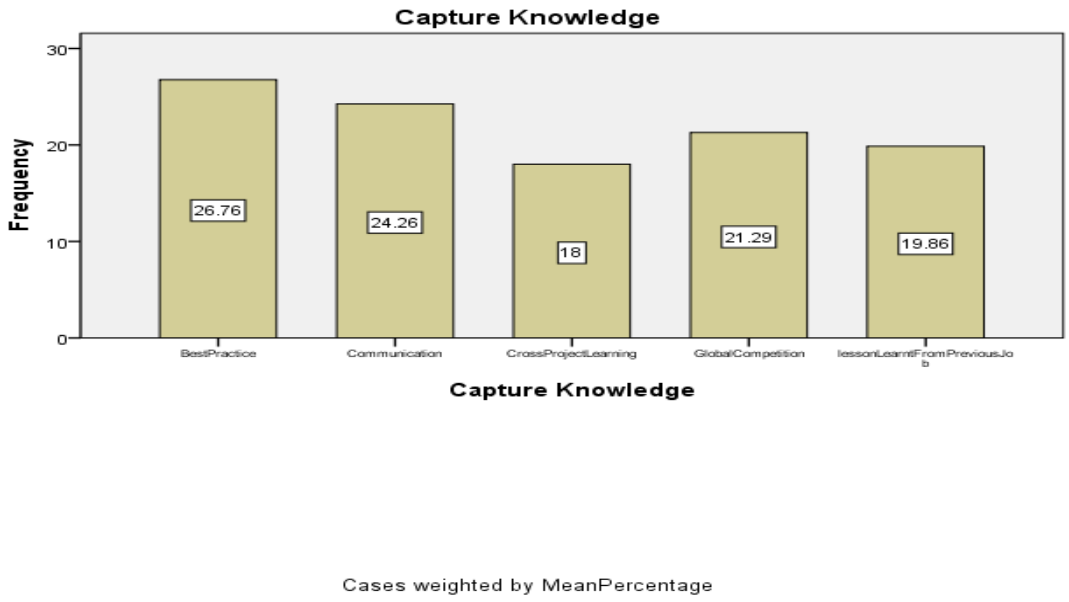
The **frequency for these variables**, in its order of the question, are A) 24, B) 32, C) 36, D) 24,

E)22. Thus most used is C) Communication.

All the units under enquiry have shown the existence of one or more practice. However, at individual as well as collective level, the percentage is not satisfactory.

80% of the organizations have plans to use all the practices. However, mainly using best practices prevailing in the field is the source which is preferred.

Graph 3.3: Mean percentile usage of Capture practices.



4-2.3 In which areas it is used from the following

Table 3.5 : Area wise user unit percentage

Communication	Knowledge Capture % of user units	Knowledge Refinement % of user units	Knowledge Disseminate % of user units
A.As a practice	93	78	69
B.Manuals	88	92	76
C.Meetings	88	80	72
D.Cross project learning	77	92	76
E.Library	78	75	**62 #**
F. Internet	92	78	75
G.Video conferencing	83	83	72
H.Intranet	89	85	65

All the variables are in good use. E-library has shown the lowest use by 62% only. The above output shows multiple response analysis for a multiple choice variable "Areas in which communication as a practice is used". Respondents were given three options Knowledge Creation, Knowledge Refinement and Knowledge Dissemination, and were asked to choose which ever applicable. The checked variables was coded as yes and unchecked as no.

93.2% said Communication as a practice to capture knowledge, 92.4% said Knowledge Refinement is done by using manuals, 87.8% said communication through meetings is part of Knowledge Capture, 91.3% Knowledge Refinement cross project learning, 77.4% said Knowledge Capture communication through library, 91.3% Knowledge Capture communication through internet, 83% Knowledge Capture communication through video conferencing, 85.4% Knowledge Refinement communication through Intranet.

4-2.4 Which instruments does your organisation use to **capture** technological Knowledge?
Give proportion of usage in % of total application

Instruments used	% of Usage	Plan to use in future
A.Database searches(e.g experts, patents, literature etc)		
B.Internet searches		
C.MAPI (Messaging Application Program Interface)		
D.Lotus notes		
E.SAP		
F.Project reports		
G.Dataware house/mining software		
H.Groupware		

……

Analysis : For each variable, S.D, Skewness and Kurtosis are measured individually. The result showed that the figures so worked out are within the threshold range and it implied the assumption of normality as tenable.

The following graph shows the percentile of usage of IT Instruments. Capture Technological Knowledge is done by using these IT Instruments such as Internet Searches, MAPI, etc. in the percentage mean range of 14% to 25% .

Comment :

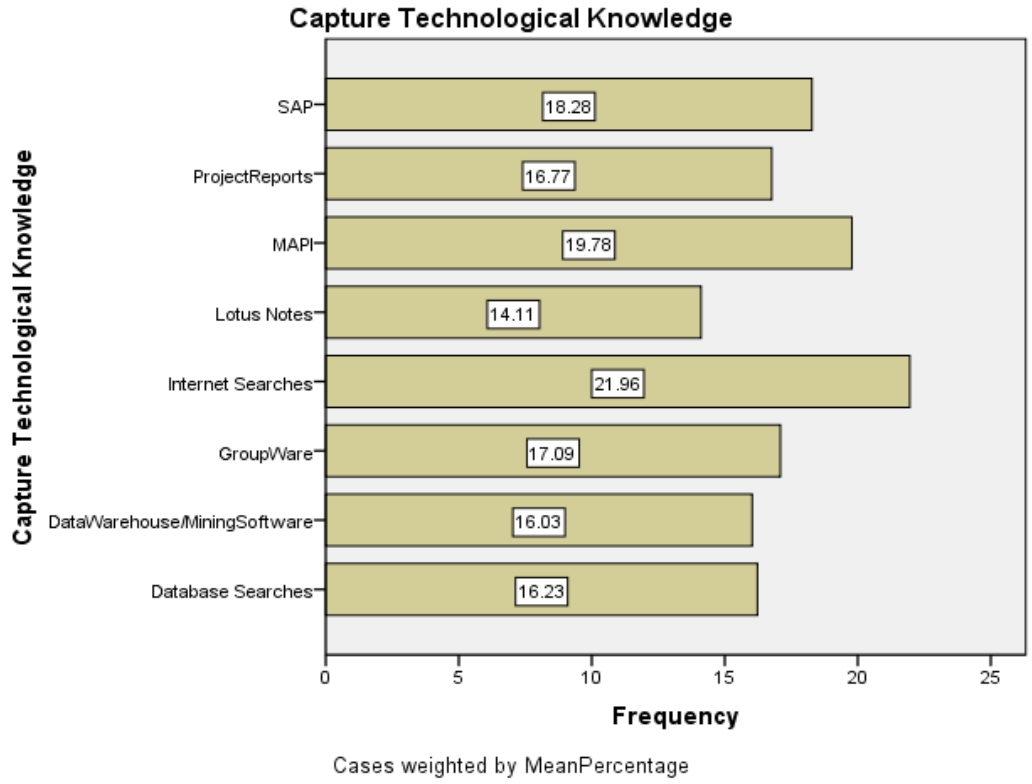
The frequency for these variables, in its order of the question, are A) 29,

B) 15, C) 7, D) 18, E)32, F) 24, G) 18, H) 22. Thus most used is E) SAP.

All the units under enquiry, have shown the existence of one or more use of IT Instrument. However, at individual as well as collective level, the percentage is not satisfactory.

88% have an intention to use IT Instruments in future but the main focus is on Data base searches, Internet and SAP.

Graph 3.4 : Mean percentile of usage of IT Instruments for technological Capture.



This part focuses on dissemination of Knowledge via training and mentoring. Accordingly, various forms are considered. The question attempts to find out how much is the usage percentage of these different forms.

4-3. Knowledge **Dissemination** within your organisation via training.

Training related to K.M.practices	% of Usage	Plan to use in future
A. provides formal training related to K.M.Practices		
B. provides informal training related to K.M.Practices		
C. uses formal mentoring practices, including apprenticeships		
D. encourages experiences workers to transfer their Knowledge to new or less experienced workers.		
E. Offers off-site training to workers in order to keep skills current.		

Analysis : For each variable, S.D, Skewness and Kurtosis are measured individually. The result showed that the figures so worked out are within the threshold range and it implied the assumption of normality as tenable.

The following graph shows the percentile of usage of different form of Knowledge Dissemination. Knowledge Dissemination is done by using these forms such as formal trainin g, informal training, mentoring, etc. in the percentage mean range of 17% to 23% .

Comment :

The frequency for these variables, in its order of the question, are A) 30 B) 28 C) 22 D) 30 E)25

Organisation mainly encourages experience workers to transfer their knowledge to new or less experienced workers. Formal training related to KM practices and offers off-site training to workers in order to keep skills current are at same level. 19.85% uses formal mentoring practices including apprenticeships and least use of Informal Training related to KM practices.

Nearly 60% have shown their desire mainly to use in future a) formal training b) Encourage experience workers to transfer their knowledge to new or less experienced workers.

Graph 3.5 : Mean percentile of usage of Knowledge Dissemination via Training.

4-3.A.What are the practices that you are using to **disseminate** the knowledge

Means to spread knowledge	% of Usage	Plan to put in use
A. Knowledge Transfer Form		
B. Retention Program		
C. Documents		
D.Video conferencing		
E. Internet		
F. Intranet		
G.Knowledge is shared in meetings		
H.Manuals		
I.Notices		
J.Library		
K. Monographs		
L.CDs		
Any other please specify		

……

This part deals with dissemination of Knowledge other forms than training. Accordingly, various means to spread the knowledge are taken into account. The question attempts to find out how much is the usage percentage of these different forms.

Analysis : For each variable, S.D, Skewness and Kurtosis are measured individually. The result showed that the figures so worked out are within the threshold range and it implied the assumption of normality as tenable.

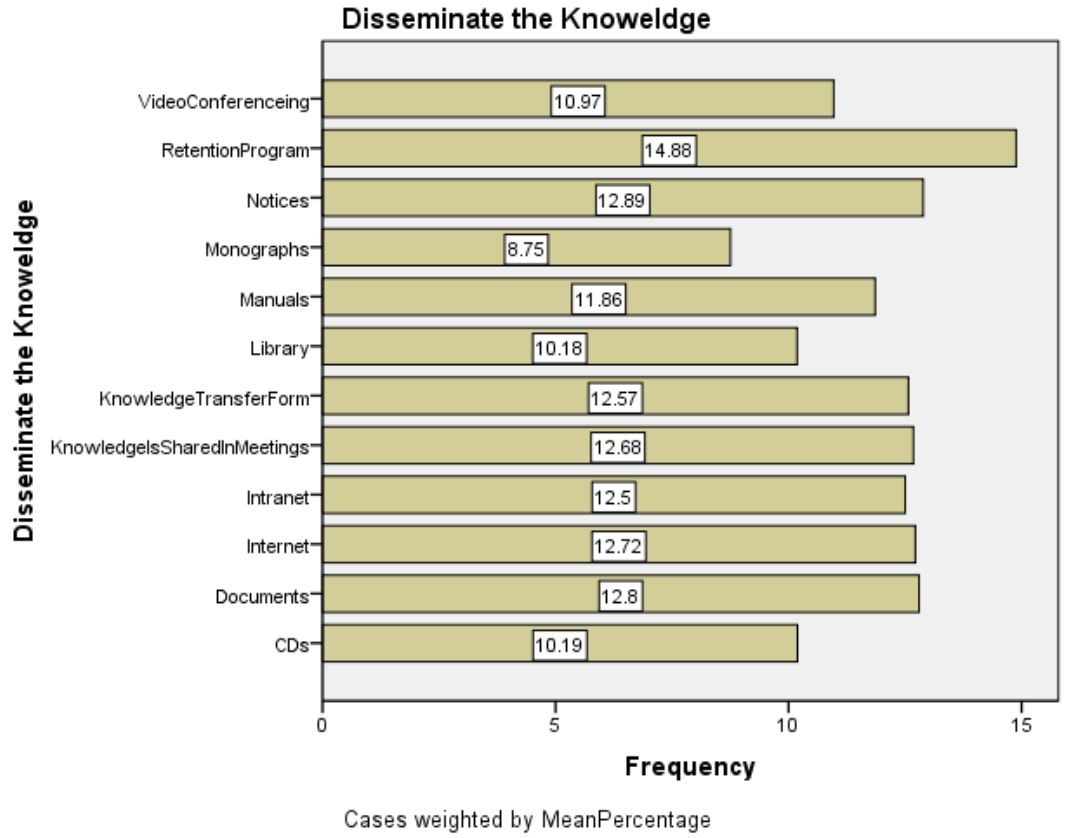
The following graph shows the percentile of usage of different means to Knowledge Dissemination. Knowledge Dissemination is done by using these forms such as Knowledge transfer form , Retention program , Documents, Video conferencing, etc. in the percentage mean range of 8% to 15% .

Comment :

The frequency for these 12 variables, range between 4 to 54. Out of those highly preferred are Knowledge is shared in meetings, Manuals, Knowledge Transfer form.

Number of responses for future use in respect of Internet are 59 and Documents also have 59.

Graph 3.6 : Mean percentile of usage of Knowledge Dissemination via Other modes.



4-4 In your organization workers share Knowledge or information via :-

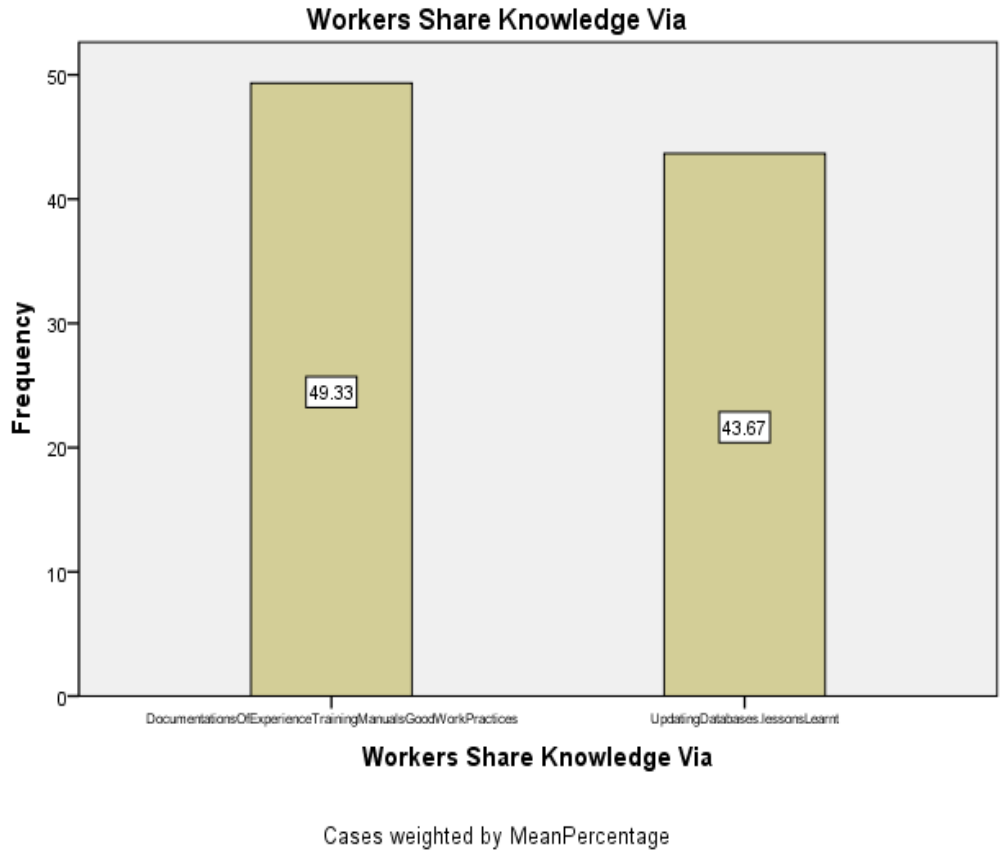
Knowledge Maintain/storage of tacit knowledge	% of Usage	Plan to use in next 24 months
A. regularly updating databases of good work practices, lessons learned or listing of experts		
B. documentation of experience, training manuals, good work Practices.		

……

In organizations workers share knowledge via regularly updating databases of good work practices, lessons learned or listing of experts. 43.67% but major emphasis is given on documentation of experience, training manuals, good work practices i.e 49.33% that will help to solve some problems as documentation is an explicit Knowledge.

Here future use has a very positive response as 92% have shown keen interest in regularly updating databases of good work practices, lessons learnt or listing of experts, etc.

Graph 3.7 : Mean percentile of Knowledge Maintain/storage



4-5 **Knowledge Source** Please indicate which source influenced your organization to put into effect the K.M.practices that you currently use(check all that apply)
(a) Management (Internal)
(b) Non-Management workers (Internal)
(c) Competitors (External)
(d) supply to OEMs (External)
(e) Professional in trade (External)
(f) Industrial Associates (External)
(g) Consultants (External)
(h) Customers and Clients (External)
(i) other : _____
……

Table 3.6 : Knowledge source which influenced organization to put into effect the K.M Practices

		Responses		Percent of Cases
		N	Percent	
Knowledge source[a]	management (internal)	52	13.5%	96.3%
	Non management workers (internal)	50	13.0%	92.6%
	competitors (External)	50	13.0%	92.6%
	Supply to OEMS (External)	41	10.7%	75.9%
	Professional in trade (External)	45	11.7%	83.3%
	Industrial Associates (External)	50	13.0%	92.6%
	Consultants (External)	49	12.8%	90.7%
	Customer and clients (External)	47	12.2%	87.0%
Total		384	100.0%	711.1%

The source influenced the organization to put into effect the K.M.practices that you currently use management (internal) was at highest % 13,5, Non management workers (internal), competitors (External), Industrial Associates (External) at 13%, Consultants (External) 12.8%, Customer and clients (External) 12.2%, Supply to OEMS (External) 10.7%.

There are in all eight sources in consideration. The frequency shows that all are having equal percentage of frequency in sourcing the knowledge. In other words no single of specific source is preferred as all of them have frequency rotating around 13%.

4-5.A. Which of these below fall under different sources of Knowledge types Please tick any one

Different sources	Explicit	Tacit knowledge(Which resides in human brains)	None of these
A.Books, Journals			
B.Innovation of new ideas			
C.Experiences			
D.Documents			
E.Human mind sets			
F.websites			
G.Unconscious values			
H.Rules and procedures			

A.61 units respond that books and journals are falling in the category of explicit knowledge. This shows appropriate awareness about the right recognition of the source.

B. Innovation of new ideas are considered by 78% respondents as tacit knowledge which is confirmatory.

C. Experiences is considered as tacit knowledge by 80% of the respondents.

D. 84% consider Documents as explicit Knowledge which is the right recognition.

E.Human mind sets 61% consider as tacit Knowledge.

F.88% have put it in explicit category.

G.72% recognize this as tacit knowledge

H.78% have responded it as explicit Knowledge.

Comments :

The respondents are well aware of the category of tacit and explicit knowledge. This is quite satisfactory level of awareness which owes to the practices in which they are engaged.

4-6 Knowledge Application Incentives to implement K.M.Practices. What would motivate your organisation to implement or to increase K.M.Practices? (Check all that apply)

(a) Difficulty in capturing workers undocumented knowledge(know-how)
(b) Use of K.M.tools or practices of competitors
(c) Develop new products and services
(d) reduced cost
(e) improve customer retention and satisfaction
(f) To enhance brand value
(g) To increase the market share
(h) Others :_____

……

This part attempts to find out the motives behind the purpose of K.M implementation in the organization.

All the motives are having almost same weight or purpose as (except the first and the last item) are having the percentage of 15% of their response frequency. Difficulty in capturing workers undocumented knowledge(know-how) only 11% of its frequency response. Similarly the motive of increasing market share shows lower weight age of 13.8.

4-7 General Information on K.M. practices within your organisation policies and strategies

(Select one response for each item)

Polices and Strategies	% of Usage	plan to use in next 24 months
A. Does your organisation have polices or programs intended to improve worker retention		
B. Are Business Process documented		

……

Statistics

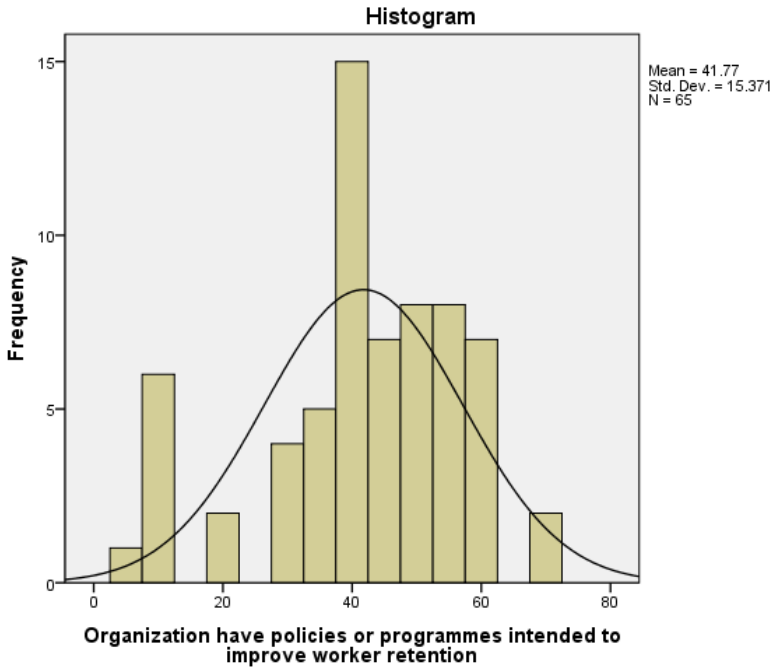
Organization have policies or programmes intended to improve worker retention

N	Valid	65
	Missing	10
Mean		41.77
Median		40.00
Mode		40
Std. Deviation		15.371
Skewness		-.711
Std. Error of Skewness		.297
Kurtosis		.175
Std. Error of Kurtosis		.586
Range		65
Minimum		5
Maximum		70

Table 3.7 : Data showing Organization have policies or programmes intended to improve worker retention

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	1	1.3	1.5	1.5
	10	6	8.0	9.2	10.8
	20	2	2.7	3.1	13.8
	30	4	5.3	6.2	20.0
	35	5	6.7	7.7	27.7
	40	15	20.0	23.1	50.8
	45	7	9.3	10.8	61.5
	50	8	10.7	12.3	73.8
	55	8	10.7	12.3	86.2
	60	7	9.3	10.8	96.9
	70	2	2.7	3.1	100.0
	Total	65	86.7	100.0	
Missing	System	10	13.3		
Total		75	100.0		

Graph 3.8 : Polices and strategies regarding KM practices



A) 65 respondents have agreed to the intention of improving workers retention. Similarly 65 respondents have shown that business process is documented.

Standard Deviation is less than 1/2th of the mean . Skewness is-.711, Kurtosis is .175 both the values are within the threshold range. It is therefore concluded that the assumption of normality is tenable.

In case of future use, 83% have a plan to use polices or programs which is quite satisfactory.

B. Are Business Process documented

Statistics

Are business process documented

N	Valid	65
	Missing	10
Mean		48.62
Median		50.00
Mode		60
Std. Deviation		14.777
Skewness		-.575
Std. Error of Skewness		.297
Kurtosis		-.078
Std. Error of Kurtosis		.586
Range		70
Minimum		10
Maximum		80

Table 3.8 : Mean percentile of "Are business process documented"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	1	1.3	1.5	1.5
	20	5	6.7	7.7	9.2
	30	6	8.0	9.2	18.5
	40	7	9.3	10.8	29.2
	45	8	10.7	12.3	41.5
	50	9	12.0	13.8	55.4
	55	7	9.3	10.8	66.2
	60	13	17.3	20.0	86.2
	65	5	6.7	7.7	93.8
	70	3	4.0	4.6	98.5
	80	1	1.3	1.5	100.0
	Total	65	86.7	100.0	
Missing	System	10	13.3		
Total		75	100.0		

Graph 3.9 : Graph shown are business process documentation.

B) Standard Deviation is less than 1/3rd of the mean. It is important to test assumption of normality. According to Geogre and Mallery, Skewness and Kurtosis are between +1 and -1 suggest normality in the current case. Skewness is -.575, Kurtosis is -.078 both the values are within the threshold range. It is therefore concluded that the assumption of normality is tenable.

In case of future use, 79% have a plan to use Business process is documented which is quite satisfactory.

4.7.(A)**Leadership**

In your firm KM practices are :(check one response for each item)

Responsibilities	% of Usage	plan to use in next 24 months
A. responsibility of managers and executives		
B. responsibility of non-management workers		
C. responsibility of knowledge officer or KM unit		

Out of 75 respondents, 73 respondents say that Leadership is responsibility of managers and executives. Only 2 respondents assume that the responsibility is of non-management workers or KM officers. The present situation is that there is no specific knowledge officer as such who will look after overall KM. Currently, the head of the particular department does the job of Knowledge Officer along with his other functions.

However, the sample elements conceded to have independent knowledge officer whose percentage is 84.

5. This section attempts to measure the effectiveness of using KM practices. There are various reasons and objectives for which the organizations follow KM practices. Indicatively, 12 of them are selected. As the nature of the response is regarding effectiveness, it is qualitative in nature. Therefore, four point scale is used to measure the effectiveness.

Check ONE response for each item

Effectiveness of Using K.M.Practices	Very Effective	Effective	Moderately effective	Not so much effective
A- To uplift the competitive advantage of your organisation				
B-To help integrate knowledge within your organisation				
C-To improve the capture and use of knowledge from sources outside your organization.				

Effectiveness of Using K.M.Practices	Very Effective	Effective	Moderately effective	Not so much effective
D-To improve sharing or transferring of knowledge with partners in strategic alliances				
E-To increase efficiency by using knowledge to improve production processes.				
F-To protect your organization from loss of knowledge due to workers departures.				
G-To train workers to meet strategic objectives of your organization.				
H-To increase worker acceptance of innovations				
I-To improve worker retention				
J-To identify and to protect strategic knowledge present in your organization				
K-To promote sharing or transferring knowledge with clients or customers				
L-To increase the productivity and lowering cost and maximise the profit				

……

Inference :

All the reasons are supported by the respondents on the scale of effectiveness ranging from 55% to 60% . The following table shows the frequency of responses against each reason for use of KM practice.

Table 3.9 Frequency of effectiveness of KM practices.

Effectiveness of Using K.M. Practices	Very Effective	Effective	Moderately effective	Not responded	Total
A-	58	13	00	04	75
B-	55	14	03	03	75
C-	50	21	03	01	75
D-	50	18	07	00	75
E-	54	14	05	02	75
F-	62	05	07	01	75
G-	60	08	05	02	75
H-	43	24	06	01	75
I-	50	17	04	03	75
J-	57	15	03	00	75
K-	58	15	02	00	75
L-	59	15	01	00	75

The respondents gave equal weight age to all of them.

6.This section measures the results of using KM practices. In the table below, please indicate the level of effectiveness you attribute to these results for the KM practices currently in use in your organization. Check ONE response for each item

Results of Using K.M.Practices	Very Effective	Effective	Moderately effective	Not so much effective	Not at all effective
A-Increased our knowledge sharing horizontally (across departments, functions or business units)					
B-Increased our knowledge sharing vertically and better decision making (up the organisation hierarchy)					
C-Improved worker efficiency and productivity					
D-Improved skills					

and knowledge of workers					
E-increased our number of markets(more geographic locations)					
F-Helped us to add new products or services					
G-Increased flexibility in production and Innovation					
H-Prevented duplicate research and development					
I-Improved involvement of workers in the workplace activities					
J-Employees are encouraged to openly share their knowledge					

……

Analysis : This question is analyzed along with the following questions as all of them have an bearing on the result regarding the dependence of number and nature of KM practices.

The KM Practices is an Independent variable (was a summated scale created using average of the following variables 4.1.A, 4.1.B,4.1.C,4.2.2.A, 4.2.2.B, 4.2.2.C, 4.2.2.D, 4.2.2.E, 4-2.4.A, 4-2.4 B, 4-2.4.C, 4-2.4.D, 4-2.4.E, 4-2.4.F, 4-2.4.G, 4-2.4.H, 4.3.A, 4.3.B, 4.3.C, 4.3.D, 4.3.E, 4.3.F, 4.3.G, 4.3.H, 4.3.A.A, 4.3.A.B, 4.3.A.C, 4.3.A.D, 4.3.A.E, 4.3.A.F, 4.3.A.G, 4.3.A.H, 4.3.A.I, 4.3.A.J, 4.3.A.K, 4.3.A.L, 4.4.A, 4.4.B, 4.7.A, 4.7.B, 4.7.A.A, 4.7.A.B, 4.7.A, 4.7.A.C.

Along with above variables, question no. 6.F-Helped us to add new products or services, were analyzed statistically and table was formed which is as follows.

Whether "KM practices" is a significant predictor of "Increased Knowledge Sharing vertically and better decision making (up the organization hierarchy)".

Statistical Test: Simple Regression Analysis

Level of Significance : $\alpha = 0.05$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.370[a]	.137	.125	.398

a. Predictors: (Constant), Knowledge Mgmt Practices

The table labeled model summary shows R=.370, this shows a weak relationship between "KM practices" and "Increased Knowledge Sharing", R square=.137 this shows that 13.7 % variance in "Increased Knowledge Sharing" is explained by KM practices.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.828	1	1.828	11.547	.001[a]
	Residual	11.558	73	.158		
	Total	13.387	74			

a. Predictors: (Constant), Knowledge Mgmt Practices

b. Dependent Variable: Increased our knowledge sharing horizontally (across departments, functions or business units)

Observation

F(1,73)=11.54,p-value (0.001)<0.05

ANOVA tests whether the model is significant. The F test is significant since the p value 0.001 is less than level of significance (0.05)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.525	.382		9.235	.000
	Knowledge Mgmt Practices	.069	.020	.370	3.398	.001

a. Dependent Variable: Increased our knowledge sharing horizontally (across departments, functions or business units)

The t-tests tests whether B coefficient of KM practices is significant.

The table labeled "coefficient" suggest that the B coefficient (0.069) is significant since p-value 0.001 is less than 0.05

Observation

T=3.398, p-value(.001) <0.05

Thus the regression equation for the above relationship can be presented as follows

Increased Knowledge Sharing =3.525 + 0.069 (KM Practices)+e

We therefore conclude that if KM is increased by one unit Knowledge sharing will increase by 0.069.

Whether "KM practices" is a significant predictor of "Helped us to add new products or services"

Statistical Test: Simple Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.447[a]	.200	.189	.612

a. Predictors: (Constant), Knowledge Mgmt Practices

The table label model summary shows R=.447 this shows a weak relationship between "KM practices" is a significant predictor of "Helped us to add new products or services",

R square=.200 this shows that 20% variance in "Helped us to add new products or services" is explained by KM practices.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.837	1	6.837	18.250	.000[a]
	Residual	27.349	73	.375		
	Total	34.187	74			

a. Predictors: (Constant), Knowledge Mgmt Practices

b. Dependent Variable: Helped us to add new products or services

Observation

F(1,73)=18.250,p-value(.000)<0.05

ANOVA tests whether the model is significant. The F test is significant since the p value 0.000 is less than level of significance (0.05)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.096	.587		3.569	.001
	Knowledge Mgmt Practices	.134	.031	.447	4.272	.000

a. Dependent Variable: Helped us to add new products or services

The t-tests tests whether B coefficient of KM practices is significant. The table labeled "coefficient" suggest that the B coefficient (0.134) is significant since p-value 0.000 is less than 0.05.

Observation

T=4.272, p-value(.000) <0.05

Thus the regression equation for the above relationship can be presented as follows

Helped us to add new products or services =2.096 + 0.134 (KM Practices)+e

We therefore conclude that if KM is increased by One unit "Helped us to add new products or services" by 0.134

Purpose : To study whether "KM practices" is a significant predictor of "Increased flexibility in production and Innovation"

Statistical Test: Simple Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.266[a]	.071	.058	.567

a. Predictors: (Constant), Knowledge Mgmt Practices

The table label model summary shows R=.266 this shows a weak relationship between "KM practices" is a significant predictor of "Increased flexibility in production and Innovation", R square=.071 this shows that 7.1% variance in "Increased flexibility in production and Innovation" is explained by KM practices.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.792	1	1.792	5.570	.021[a]
	Residual	23.488	73	.322		
	Total	25.280	74			

a. Predictors: (Constant), Knowledge Mgmt Practices

b. Dependent Variable: Increased flexibility in production and Innovation

Observation

F(1,73)=5.570, p-value(.021)<0.05

ANOVA tests whether the model is significant. The F test is significant since the p value 0.021 is less than level of significance (0.05)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.365	.544		6.183	.000
	Knowledge Mgmt Practices	.069	.029	.266	2.360	.021

a. Dependent Variable: Increased flexibility in production and Innovation

The t-tests tests whether B coefficient of KM practices is significant. The table labeled "coefficient" suggest that the B coefficient (0.069) is significant since p value 0.021 is less than 0.05

Observation

T=2.360, p-value(.021) <0.05

Thus the regression equation for the above relationship can be presented as follows

Increased flexibility in production and Innovation =3.365 + 0.069 (KM Practices)+e

We therefore conclude that if KM is increased by One unit flexibility in production and Innovation is increased by 0.069.

Whether "KM practices" is a significant predictor of "Improved involvement of workers in the workplace activities".

Statistical Test: Simple Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.460[a]	.212	.200	.338

a. Predictors: (Constant), Knowledge Mgmt Practices

The table label model summary shows R=.460 this shows a weak relationship between "KM practices" is a significant predictor of "Improved involvement of workers in the workplace activities ",R square=.212 this shows that 21.2% variance in "Improved involvement of workers in the workplace activities" is explained by KM practices.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.112	1	2.112	18.543	.000[a]
	Residual	7.860	69	.114		
	Total	9.972	70			

a. Predictors: (Constant), Knowledge Mgmt Practices

b. Dependent Variable: Improved involvement of workers in the workplace activities

Observation

F(1,69)=18.543,p-value(.000)<0.05

ANOVA tests whether the model is significant. The F test is significant since the p-value 0.000 is less than level of significance (0.05)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.437	.326		10.540	.000
	Knowledge Mgmt Practices	.075	.017	.460	4.306	.000

a. Dependent Variable: Improved involvement of workers in the workplace activities

The t-tests tests whether B coefficient of KM practices is significant. The table labeled "coefficient" suggest that the B coefficient (0.075) is significant since p-value 0.000 is less than 0.05

Observation

T=4.306, p-value(.000)<0.05

Thus the regression equation for the above relationship can be presented as follows

Improved involvement of workers in the workplace activities =3.437 + 0.075(KM Practices)+e

We therefore conclude that if KM is increased by One unit then involvement of workers in the workplace activities increased by 0.075.

The result that p-value is less than 0.05.

Table 3.10 : Descriptive Statistics of Results of using KM practices

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Knowledge Mgmt Practices	75	-.855	.277	.165	.548
Increased our knowledge sharing vertically and better decision making (up the organisation hierarchy)	75	-1.428	.277	.040	.548
Helped us to add new products or services	75	-1.384	.277	.582	.548
Increased flexibility in production and Innovation	75	-1.404	.277	1.018	.548
Improved involvement of workers in the workplace activities	71	-1.805	.285	1.293	.563
Valid N (listwise)	71				

Simple Regression Analysis for each variable is used to study impact of Independent variable on dependent variable. In the current case the Independent variable is KM practices and there were in all five dependent variables shown in the question. We conclude the distribution of Independent variable KM practice is normal. Kurtosis values for variables Increased our knowledge sharing vertically and better decision making (up the organisation hierarchy), Helped us to add new products or services are well within the threshold range however swekness values for these two variables are slightly above the threshold. Swekness and Kurtosis values shows increase in flexibility in production and innovation, Improved involvement of workers in the workplace activities are slightly above threshold i.e +1 and -1.

7. Responsibility for K.M.practices. Which of the following area is responsible for K.M.Practices currently in use in your organization, Check one response only

(a) Human Resources
(b) Information Technology
(c) K.M.Unit
(d) Library/Documentation Centre
(e) Don't know
(f) Other, please specify

……

Table 3.11: Frequency distribution of Responsibility for KM practices

	Frequency	Percent
human resources	37	49.3
information technology	14	18.7
Library/documentation centre	4	5.3
Sub Total	55	73.3
Not responded	20	26.7
Total	75	100.0

Respondents do not support K.M.Unit but are having higher frequency for human resources and IT. It is noticed that there is no specific responsibility on specific department.

8. What are your parameters to measure effectiveness of KM Practice?
(I) Knowledge Creation (II) Knowledge Refinement
(III) Knowledge Dissemination (IV) Knowledge Storage

Analysis : The responses for this question had a very general nature. Following are the parameters stated by the respondents. These responses are satisfactory in number, and throw sufficient light on effectiveness of KM practices, with reference to the nature of parameters.

(I) Knowledge Creation

1. Training Effectiveness
2. Responsibility pin pointing and commitment mapping.
3. Knowledge Competitiveness
4. Quality relevance and volume of information.
5. Usability of information conversion.
6. Centralised sharing of knowledge.
7. Interactive session.
8. Availability of reference manuals.
9. Access to global research materials.
10. Project related documents about KM.
11. Procedures leading to systems.
12. Number of new ideas generated.
13. Number of innovations crystalised into products.

(II) Knowledge Refinement

1. Making user friendly.
2. Suitable editing with proper categorisation.
3. Domain specific refinement.
4. Refinement for agile projects.

(III) Knowledge Dissemination

1. Number of spread of locations.
2. Number of IT tools and techniques used for increasing width and breadth.
3. Number of Video conferencing
4. Interactive exchange mechanisms
5. Number of incentive schemes

(IV) Knowledge Storage

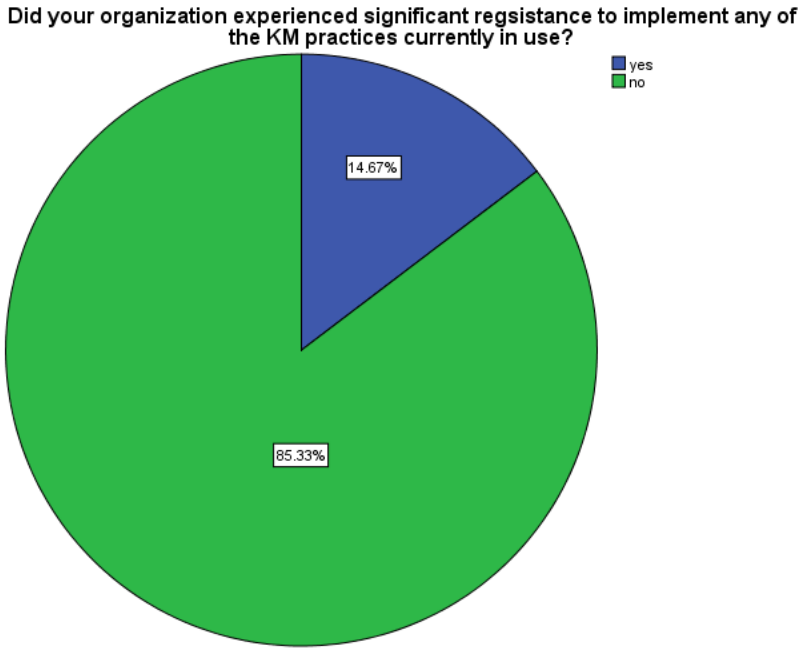
1. Number of Knowledge management units.
2. Efficiency of Data ware housing and Data Mining

9. Resistance to K.M.Practices? Did your organisation experience significant resistance to implementing any of the K.M.practices currently in use?
(a)No (b)Yes (if yes answer below question)
……

Table 3.12 : Resistance to implement any of the KM practices currently in use?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	11	14.7	14.7	14.7
	no	64	85.3	85.3	100.0
	Total	75	100.0	100.0	

Graph 3.10 : Resistance to implement KM practices



85.33% of respondents present that there is no resistance which is acceptable since by now the awareness about the benefits of KM practices are well established and its significance is well recognized. However, remaining 14.67% have different contention.

9(A). Which groups resisted the implementation of K.M.Practices currently in use? Officers and workers, Check **ALL** that apply

(a) Lack of focus from Management
(b) Lack of initiative of Non-Management workers
(c) time limitations/over burden with day today activities
(d) Lack of knowledge
(e) No Innovations and generation of ideas
(f) No monetary benefits
(g) Other: _____

……

Table 3.13 Distribution of Reasons for Resisting for Implementation of KM Practices.

	Responses		Percent of Cases
	N	Percent	
Lack of focus from Management	11	25.6%	64.7%
Lack of initiative of Non-Management workers	10	23.3%	58.8%
time limitations/over burden with day today activities	6	14.0%	35.3%
Lack of knowledge	9	20.9%	52.9%
No Innovations and generation of ideas	5	11.6%	29.4%
No monetary benefits	2	4.7%	11.8%
Total	43	100.0%	252.9%

Analysis : The above SPSS output shows frequency distribution of the variable "Groups resisted the implementation of K.M.Practices currently in use" out of 75 valid (respondents).

25.6% say Lack of focus from Management which is highest level of group which resist the implementation of KM practices currently in use, then 23.3% are Non-Management workers who resist the implementation of KM practices

currently in use. 20.9% say Lack of knowledge, 14% say that time limitations or over burden with day today activities resist the implementation of KM practices currently in use. 11.6% say No Innovations and generation of ideas, 4.7% say No monetary benefits.

Out of six reasons, there are three major reasons having almost equal weight age for the resistance.

9(B.) Functions, Departments or Business Units Check **ALL** that apply

(a) Information Technology (b) Research and Development
(c) Production (d) Marketing, Sales
(e) Engineering communications. (f) Distribution, purchasing,
(g)Administration, Accounting, Human resource

……

Table 3.14 : Frequencies related to Resisted The Implementation Of KM Functions/Dept/Business Units

		Responses		Percent of Cases
		N	Percent	
Resisted The Implem Of KM Functions Dept Or Business Units[a]	Information Technology	8	21.6%	44.4%
	Research and Development	9	24.3%	50.0%
	Production	5	13.5%	27.8%
	Marketing, Sales	6	16.2%	33.3%
	Distribution, purchasing, communications.	1	2.7%	5.6%
	Administration, Accounting, Human resource	8	21.6%	44.4%
Total		37	100.0%	205.6%

a. Dichotomy group tabulated at value 1.

The above SPSS output shows frequency distribution of the variable "Groups resisted the implementation of K.M.Practices Functions, Departments or Business Units" out of 75 valid (respondents). 24.3% say Research and Development , 21.6% say Information Technology and Administration, Accounting, Human resource , 16.2% say Marketing, sales, 13.5% Production, 2.7% say Distribution, purchasing, communications.

For this question majority of the sample elements did not reply and hence the further analysis was not possible. The reason behind this is likely to be psychographic as if the department would have been mentioned it would have impact on their relationship.

10. Major barriers in Implementing K.M.Practices

Major implementation barriers and difficulty level for overcoming the same	High difficulty	Moderately difficulty	No difficulty
A.Information Technology			
B.Not willing to share knowledge			
C.Lack of trust			
D.Knowledge sharing not a part of daily work			
E. Lack of training			
F. Lack of rewards/recognition of Knowledge sharing			
G. To extract knowledge from various resources			
H. Financial (Cost)			
I. Lack of participation			

……

For the analysis of responses to this question the following steps were followed for each individual variable from A to I.

a) plotted frequency distribution for three point scale.
b) Frequency and percent bar graphs were taken as output through SPSS.
c) Following is the computation of the values.

Table 3.15 : Mean Rank values of major barriers in KM Implementations

Ranks

	Mean Rank
Information Technology	4.63
Not willing to share knowledge	5.19
Lack of trust	5.36
Knowledge sharing not a part of daily work	4.61
Lack of training	5.25
Lack of rewards/recognition of Knowledge sharing	5.49
To extract knowledge from various resources	4.51
Financial (Cost)	4.61
Lack of participation	5.34

Test Statistics[a]

N	57
Chi-square	19.689
df	8
Asymp. Sig.	.012

a. Friedman Test

Conclusion – Since p-value is less than significance the null hypothesis is rejected and it can be concluded that there is difference in the magnitude of barriers in Implementation of KM practices further referencing to mean ranks in the table labeled "ranks" it can be concluded that "Lack of participation, lack of rewards/recognition of Knowledge sharing, Lack of training, Lack of trust, Not willing to share knowledge" are the major barriers.

Summary of Analysis :

Overall awareness about KM and its practices is very satisfactory.

I) Knowledge Sharing :

a) Awareness and practice of knowledge sharing modes are moderate level.

b) Public research institutions is the major source preferred.

II) Knowledge Acquisition

a) Capture sources have equal ranking.

b) For capturing knowledge, the reliance is on mainly KM practices, prevailing in different organizations.

c) IT Instruments are used and are also planned to be used but at present sumptuous usage of IT instruments, particularly for technological knowledge is having below average state.

III) Knowledge Dissemination

a) The units are having still more reliance on training and for other sources like KM transfer forms, retention programs and documents etc. are at very low level of 8% to 15%.
b) Explicit and tacit Knowledge categories are well internalized for the recognition and conceptual understanding.
c) Non monetary incentives have been given good weight age for better dissemination.

IV) Knowledge maintenance and storage.

Emphasis is given on documentation of experience, training manuals and good work practices.

CHAPTER IV

TESTING OF HYPOTHESES

There are in all four hypothetical statements.

Null Hypothesis :

Ho : There is no relationship between IT implementation and KM Implementation.

Alternative Hypothesis :

H1 : There is significant relationship between IT implementation and KM Implementation.

Refer the questions and analysis of 4.2.4, 4.1,6.2.2, 4.3 ,4.3 A, 4.4, 4.7 and 4.7A.

IT Implementation was measured using eight items (*A.Database searches, B.Internet searches,C.MAPI(Messaging Application Program Interface);D.Lotus notes, E. SAP,F.Project reports,G.Dataware house/mining software,H. Groupware*)

Respondents were asked to indicate proportion of usage in percentage of total application a summated scale was computed using the mean of response to all the eight variables, This new variable was named KM implementation. This variable was further converted to rank order scale using "rank cases" option in SPSS.

KM implementation was measured using 31 items (*Culture in organisation promotes knowledge sharing + promotion of knowledge sharing that will lead to monetary incentives + non-monetary incentives + Best practice to capture knowledge + Lesson learnt from previous job work + Communication to capture knowledge + Cross project learning + Global competition + Knowledge Dissemination within your organisation via formal training related to K.M.Practices + Knowledge Dissemination within your organisation via informal training related to K.M.Practices + uses formal mentoring practices, including apprenticeships + encourages experiences*

workers to transfer their Knowledge to new or less experienced workers + Offers off-site training to workers in order to keep skills current + disseminate the knowledge via Knowledge Transfer Form + disseminate the knowledge through Retention Program + disseminate the knowledge via Documents + disseminate the knowledge by Video conferencing + disseminate the knowledge through Internet + disseminate the knowledge via Intranet + disseminate the knowledge by sharing in meetings + disseminate the knowledge via Manuals + disseminate the knowledge by Notices + disseminate the knowledge through Library + disseminate the knowledge by monographs + disseminate the knowledge by CDs + workers share Knowledge or information via regularly updating databases of good work practices, lessons learned or listing of experts + workers share Knowledge or information via documentation of experience, training manuals, good work Practices.+ Does your organisation have polices or programs intended to improve worker retention + Are Business Process documented + KM practices are responsibility of managers and executives + KM practices are responsibility of non-management workers + KM practices are responsibility of knowledge officer or KM unit) a summated scale was prepared using a mean of response to these 31 items this variable was named KM implementation.

Further this variable was converted to a rank order scale using "rank cases" option in SPSS. Since both these variables were measured using ordinal scale Spearman's correlation was used to study correlation between these two variables.

Statistical Test : Spearman's Rank correlation

Level of significance $\alpha = 0.05$

Nonparametric Correlations

Correlations

			R IT implementation	Rank of KnowMgt Implementation
Spearman's rho	R IT implementation	Correlation Coefficient	1.000	.028
		Sig. (2-tailed)	.	.814
		N	75	75
	Rank of KnowMgtImplementation	Correlation Coefficient	.028	1.000
		Sig. (2-tailed)	.814	.
		N	75	75

Spearman's Rho =0.028, p-value (0.814) >0.05 since the p-value is more than level of significance. We fail to reject Null hypothesis. It is therefore concluded that there is no relationship between IT Implementation and KM Implementation.

Therefore alternative hypothesis :

Level of Knowledge Management Practices are having positive influence of IT tools used for their implementation is accepted.

Null Hypothesis :

Ho : Amongst barriers for implementation of Knowledge Management Practices, all the barriers are having equal magnitude of difficulty.

Alternative Hypothesis :

H2 : Barriers for implementation of Knowledge Management Practices exhibit difference in level of difficulty.

Refer the questions and analysis of question 10.

Statistical test : Freidman Chi square test.

Observation:

$\chi^2(8)= 19.689$, p-value<0.05, N=57

Ranks

	Mean Rank
Information Technology	4.63
Not willing to share knowledge	5.19
Lack of trust	5.36
Knowledge sharing not a part of daily work	4.61
Lack of training	5.25
Lack of rewards/recognition of Knowledge sharing	5.49
To extract knowledge from various resources	4.51
Financial (Cost)	4.61
Lack of participation	5.34

Test Statistics[a]

N	57
Chi-square	19.689
df	8
Asymp. Sig.	.012

Test Statistics[a]

N	57
Chi-square	19.689
df	8
Asymp. Sig.	.012

a. Friedman Test

Conclusion – Since p-value is less than significance the null hypothesis is rejected and it can be concluded that there is difference in the magnitude of barriers in Implementation of KM practices further referencing to mean ranks in the table labeled "ranks" it can be concluded that "Lack of participation ,lack of rewards /recognition of Knowledge sharing, Lack of training, Lack of trust, Not willing to share knowledge" are the major barriers.

Therefore following Alternative hypothesis is accepted.

H2 : Barriers for implementation of Knowledge Management Practices exhibit difference in

level of difficulty.

CHAPTER V

SUMMARY OF FINDINGS

This chapter constitutes the inferences and findings in a summarized way. The track of the chapter is backwardly linked to the question wise analysis.

I) KNOWLEDGE AWARENESS

1. 81.9% indicates high level of awareness about KMS where as Internet and e-room are more preferred.

II) KNOWLEDGE ACQUISITION

2. 92% respondents are well aware of Knowledge acquisition.
3. Some organizations offer monetary incentives or the purpose of enhancing knowledge management sharing.
4. To capture knowledge, the first preference is for public research Institutions. 80% have future plan to capture knowledge by Industrial associations, competitors, clients and suppliers.
5. e-library has shown the lowest use by 62%., 93.2% said Communication as a practice to capture knowledge, 92.4% said Knowledge Refinement is done by using manuals, 87.8% said communication through meetings is part of Knowledge Capture, 91.3% Knowledge Refinement cross project learning, 77.4% said Knowledge Capture communication through library, 91.3% Knowledge Capture communication through Internet, 83% Knowledge Capture communication through video conferencing, 85.4% Knowledge Refinement communication through Intranet.

III) KNOWLEDGE SHARING VIA INFORMATION TECHNOLOGY

6. 88% have an intention to use IT Instruments in future but the main focus is on Data base searches, Internet and SAP.

IV) KNOWLEDGE DISSEMINATION VIA TRAINING

7. Organisation mainly encourages experience workers to transfer their knowledge to new or less experienced workers. Formal training related to KM practices and offers off-site training to workers in order to keep skills current are at same level. 19.85% uses formal mentoring practices including apprenticeships and least use of Informal Training related to KM practices.

Nearly 60% have shown their desire mainly to use in future, a) formal training

b) Encourage experience workers to transfer their knowledge to new or less experienced workers.

8. The frequency for these 12 variables (A. Knowledge Transfer Form, B. Retention Program, C. Documents, D.Video conferencing,

E. Internet, F. Intranet, G.Knowledge is shared in meetings, H. Manuals, I. Notices, J.Library, K. Monographs, L.CDs) range between 4 to 54. Out of those highly preferred are Knowledge is shared in meetings, Manuals, Knowledge Transfer form.

9. The source influenced the organization to put into effect the K.M. practices that you currently use management (internal) was at highest i.e 13.5%, Non management workers (internal), competitors (External), Industrial Associates (External) at 13%, Consultants (External) 12.8%, Customer and clients (External) 12.2%, Supply to OEMS (External) 10.7%.

There are in all seven sources in consideration. The frequency shows that all are having equal percentage of frequency in sourcing the knowledge. In other words no single of specific source is preferred as all of them have frequency rotating around 13%.

V) **KNOWLEDGE MAINTAIN AND IMPLEMENTATION**

10. The respondents are well aware of the category of tacit and explicit knowledge. This is quite satisfactory level of awareness which owes to the practices in which they are engaged.

11. Knowledge Application Incentives to implement K.M.Practices.
All the motives are having almost same weight or purpose as (except the first a) Difficulty in capturing workers undocumented knowledge(know-how) and the last item g) To increase the market share are having the percentage of 15% of their response frequency. Difficulty in capturing workers undocumented knowledge (know-how) only 11% of its frequency response. Similarly the motive of increasing market share shows lower weight age of 13.8.

12. Out of 75 respondents, 73 respondents say that Leadership is responsibility of managers and executives. Only 2 respondents assume that the responsibility is of non-management workers or KM officers. The present situation is that there is no specific knowledge officer as such who will look after overall KM. Currently, the head of the particular department does the job of Knowledge Officer along with his other functions. However, the sample elements conceded to have independent knowledge officer whose percentage is 84.

13. All the reasons are supported by the respondents on the scale of effectiveness ranging from 55% to 60%.

14. 25.6% say Lack of focus from Management which is highest level of group which resist the implementation of KM practices currently in use, then 23.3% are Non-Management workers who resist the implementation of KM practices currently in use. 20.9% say Lack of knowledge, 14% say that time limitations or over burden with day today activities resist the implementation of KM practices currently in use. 11.6% say No Innovations and generation of ideas, 4.7% say No monetary benefits.

The next chapter presents conclusions and suggestions.

CHAPTER VI

CONCLUSIONS AND SUGGESTIONS

After having the analysis, its summary and stating the position of hypothetical statements, this chapter describes different suggestions.

The suggestions are within the context of the study and are having the backup of analysis, as well as the support of observations made during the visit to automobile units, interaction with the sample elements and noting during visit to their IT and other centres. At some places it has a backup of literature review also.

This part of the chapter mainly considered the basis for suggestions which is the outcome of data analysis and findings.

An attempt is made to provide backward linkage to analysis, while describing the suggestions. Where ever possible, they are made prescriptive and also comments are offered regarding its feasibility.

1. The analysis of Question no. 4 is regarding knowledge sharing. The scores are very moderate and the need is noticed to establish knowledge sharing culture. The probable barriers are lack of systematized approach for creation of culture, which is more over part of spirit and not the part of the letter as the culture cannot be created by just mere enforcement of rules and procedures.
   In order to create the culture the following steps are necessary to be taken.

   I) **Non-Monetary Aspects**.

   a) Indoctrination programmes to be conducted regularly, for internaitizing the benefits of sharing.
   b) Convincing the advantages of sharing for the career development of employees and emphasizing on how it leads to capability building of employees and therefore of the organizations.
   c) Knowledge sharing has to become the part of the value system of the organization.
      Therefore, it has to form the part of mission statement of the organization.
   d) The organization has to place where ever possible, i.e in all documents and plans both operational and strategic and has to stress the importance of sharing with its benefits derived in the past.
   e) Regular seminars are to be conducted in each department for enhancing the level of sharing.

f) Non monetary incentives be brought into practice in some of the following forms.
   (i) Certificate for recognition
   (ii) Publicity in house magazine
   (iii) Best knowledge sharer reward for the year.
   (iv) Distinction medal or a memento.

II) Monetary Aspects

During the interaction as well as the analysis of the question shows that if monetary incentives or rewards, if offered, the employees shall be more keen to share the knowledge. The incentive plans are for an individual and a group.

The following are the guide lines for implementing the incentive plans for fostering knowledge sharing.

a) Performance of sharing should be measureable e.g number of instances of sharing, volume of sharing, number of persons/ departments to whom shared.
b) The monetory reward be such which would satisfy the rewardee but should not discourage other employees.
c) The range of reward should be as wide as possible.

2. Sources of Knowledge capture is related to Analysis of Question no 4.2.1. It indicates the highest rank for public research institutions and lowest to participation in project teams with external experts.

Considering the results the certain suggestions are made which are as follows.

a) Heavy reliance on public research institutions is to be minimized. The reason behind is that these institutions do not have the same agenda, priority and significance of the objectives or goals of the organization.
b) Participation of employees is to be enhanced for the capture since it can be shared and disseminated within the organization with satisfactory speed.
c) The successful organizations achieve the success as they can do better than their competitors. Here it is suggested to have an knowledge acquisition intelligent department as the business have the marketing intelligence department. The department is expected to watch continuously about knowledge acquisition sources of the competitors.
d) Although suppliers have first rank, their contribution to knowledge acquisition can be increased by providing them some special benefits or bonus points in vendor evaluation score, or some monetary incentives.

3. The lowest response in respect to Question No 4.2.2 shown to a) Cross project learning b) lesson learnt from previous job work. This situation is not favorable for capturing knowledge effectively. Rather,

the latter is an very effective source. However, this source is not having a large use because of lack of documentation. This state of non documentation can be attributed to Indian work culture where the organizations tend to be more situational and not professional.

Following are the suggestions for the contents of Documentation:

a) Statement of the Problem
b) Consideration of the nature of problem, whether strategic or operational.
c) Detailing on plan of Knowledge acquisition for generation of alternatives.
d) Knowledge contains use for the solutions.
e) Probable usage with situations in future.
f) All above contains with time dimension.

4. Question 4.2.3 does not indicate any notable inference. However, these sources are use for by and large by the respondents mainly for knowledge capture and knowledge dissemination. It is suggested to use these sources for knowledge refinement with more proportion. The units need to evolve a system with specific objective of refinement.

e.g manuals to be designed for exclusively for refinement. Similarly video conferencing has to be exclusively address the issues of knowledge refinement.

5. Indian industries are not known for grabbing technology as earlier adopters. Although the situation is changing, the technology adoption is slower than expected. The same state is shown by the analysis of Question 4.2.4. Here the units are using one or more technology for application, but the use is very moderate. In these circumstances although the units have shown 88%, planning to adopt more advanced IT instruments, there is scope for recommendation.

a) Heavy use of data base searches be fostered.

b) Web resources as listed below,

List of Web 2, ICT for KM Implementation

Tap the tacit knowledge through ICT.

1) Twitter

2) RSS (Really Simple Syndication)

3) Wikipedia (the free encyclopedia)

4) flickr

5) Mashup (web application hybrid)

6) folksonomy

7) YouTube (broad cast yourself)

8) Cutom Searches (BitTorrent, metacrawler, dogpile)

9) Widget (new generation mobiles, are small icons)

10)Video Podcast

11) Social network aggregation (facebook,orkut,blogger,myspace)

12) Webinar (seminar held on web, 2 way video, 2way audio, or 1 way video and other way audio)

13) Tweets (Tweets are text based posts of up to 140 characters displayed)

15) kindle (books in 60 seconds, it is hardware as well as software)

are more powerful which needs to be identified and be a part of Knowledge management process.

6. Training is used well and also use of knowledged workers for dissemination is an established practice. Here, the need of systematic mentoring is felt during the interaction in the field study. (Refer analysis of Question 4-3)

Generally, the connotation of training is limited to off the job and on the job training. If looked at the training concept one should include mentoring as an integral part of the training. The researcher suggests to look at the training with broader perspective and therefore the thrust on mentoring is suggested.

The organizations need to have three tier mentor system. The mentor system shall have following characteristics.

a) Lower level is to be mentored by middle managers. (First tier)
b) Middle level managers to be mentored by higher level managers.(Second tier)
c) Higher level managers to be mentored by stalwart, experts and consultants.(third tier)
d) Plan of mentoring sessions is necessary.
e) Evaluation and feedback, documentation, is to be evolved.

7. Knowledge Retention Program was the weakest part of the respondents. Formal systems for specific retention are not present currently.

Therefore it is suggested, to evolve specific knowledge retention programs backed up by following guiding principles.

a) appropriate categorization of knowledge data.

b) specific position is to be created and job profile and specifications to be determined.

c) Review of the program is to be made regularly.

d) According to the volume of retention the incentives are to be offered.

e) The output of retention programme has to result in prevention of loss of knowledge consequent to exit of the employees from the organization.

f) The programme has to ensure by built in arrangement of informing the employees across the organization about updating the addition to tacit knowledge on day to day basis.

8. The use of e-library for Knowledge Dissemination is relatively less when seen in the present scenario of ICT. The usage of e-library is to be enhanced for which necessary training as well as some kind of incentive is necessary. (Refer to Question no. 4-2.3)

9. 92% respondents have shown positive response for enhancing the maintenance level of knowledge. It is recommended to have a well outlined plan giving details of source, nature of knowledge, volume and the device to be used for the same along with its time frame. (Refer analysis of Question 4.4)

10. Here all the alternatives have been considered by the respondents with equal importance. However, the sound practice shall get indicated by having highest significance to Customers and clients as one of the alternatives. Many firms in autosector and others gather the information through customer surveys. (Refer question 4-5). The feed back of customers influence the guidance for changes in products of services. In turn, the knowledge management process, right from acquisition to dissemination is influence by this external factor. In order to give thrust on this alternative the following steps are prescribed.

a) meetings for identifying and determination of key variables affecting the product or services from knowledge management point of view.

b) study of competitors knowledge processing in regard of so determined key variables.

c) conferences for having feed back from customers about these key variables.

d) customer survey on regular basis for the purpose.

e) transferring the tacit knowledge received from above efforts to explicit knowledge.

11. As a general inference after considering only 11% as response to item a) above, the probable reason is short coming in sharing of knowledge. Please refer suggestion no 2 and question 4.6.

12. From the analysis of Question no 4-7, from pin pointing the responsibility point of view, creating the position of Knowledge officer is essential. This will result in giving due importance to knowledge management functions. However, to make this suggestion feasible the prerequisite is to design the job profile and job specifications. Also, it should be compared with incremental financial burden and the value of benefits received there from. In case appointing a separate officer is not so feasible, some incentive for knowledge management of the department in the form of an allowance or a like kind of perquisite be given to the head of department. This will balance the gap of taking responsibility as well as vesting authority.

'We are entering (or have entered) the knowledge society in which the

basic economic resource … is knowledge … and where the knowledge

worker will play a central role …' (Drucker 1993).

13. For suggestions, in view of the nature of response received for above question as poor level of business process documentation please refer suggestion no. 4.

14. The variables of question no. 5 have received the equal weight age. This is the right result if we compare all these variables with each other. However, respondents were more judgmental while responding this question. It is recommended to have some documented reports with certain kind of indices. The indices shall help to understand the score and the level of its effectiveness in relation to productivity, control over business processes, and allied factors like wastage of material, loss of labour hours, etc, reduction in cost, number of innovative changes in the process etc. For example, if we take the variable as to promote sharing or transferring of knowledge with customers/ clients then the number of such clients in a quarter can be a good index for understanding the effectiveness of this reason. This task can be given to a knowledge officer.

15. Question no.6 talks about results of alternatives, scaled on five point of effectiveness. In order to increase the effectiveness of these variables a system should evolved where all the elements of the suggestions, covered by presiding suggestions from one to fourteen.

16. Refer Question no.7 . It is oblivious from the responses that no unit is having a separate KM unit. Also, no unit has any strong Library/Documentation centre. Therefore , the units shall have a separate centre for Knowledge Management to be nomenclatured as Knowledge Management Unit. The organization chart of the K.M unit be as under.

These suggestions are relevant but do not so much flow from data analysis and findings very directly. The major support for this suggestion is derived from the Literature Review part of the thesis.

1. Kazuo Hasono, 2006, [24] mentions about ProjectWEB.

It is a Web system for implementation tool SolutionNET activity. Such system be established in the organizations for deriving benefits :

The components / parts of the system be present are as follows : bulletin board systems(BBSs) forums, and schedulers, but the core features are the ToDoList (To Do list) and the Library.

Core tool for implementing SolutionNET activity. ProjectWEB includes various communication features such as bulletin board systems(BBSs) forums, and schedulers, but the core features are the ToDoList (To Do list) and the Library. The **ToDoList is a Web mail system** that enables users to know who has seen a message. When the message was opened, and when a request was completed. In addition, message recipients can add their comments to a ToDo message so project members can exchange information in the workplace. Project managers and project office members can comment about the members opinions, which ensures communication within the project.

2. With reference to Literature review, Austhosh Roy, it is suggested to build a team to develop 360 degree approach with the team members referred as lead experts, users, knowledge authors and project managers with responsibilities mentioned in best practices 1. Focus on depth and quality rather than breadth. 2. Find KB contributors that are both technically competent and not too far removed from customer contact 3. Provide users multiple ways to access information—FAQ, browse, search and guided help.

Conclusion

If these practices are more efficiently carried out in the Industry there will be increase in the outcome and the process will be structured.

Knowledge is captured through best practice, lesson learnt from previous job work, communication, cross project learning and global competition,. Technological knowledge capture tools used are Database searches, Internet searches, Lotus notes, SAP, Project reports, Groupware.

Knowledge is disseminated by training to the employees formally and informally, encourage experience workers to transfer their Knowledge to new or less experienced workers. When the employee leaves the organization he has to compulsory fill the exit questionnaire and the knowledge transfer form. Knowledge is disseminated via video conferencing, Internet, Intranet, shared in meetings, manuals, notices, digital libraries.

For maintaining and storing the knowledge regular updating database of good work practice, documentation of experience, training manuals, lessons learnt from previous job work is essential.

Appendix A(I)

Pilot Survey Questionnaire (basis for reliability and validity test)

Respected sir / madam, This questionnaire is for Ph.D purpose. My topic is "An empirical study of knowledge management practices in Automobile component Industry". Please help me by filling this form. I am thankful for your valuable answers and thankful for giving your valuable time. Thanking you in anticipation. Researcher - Ms Deepali Kadam(Pisal) Faculty- BVDU, IMED, Pune
Definition of Knowledge Management System - The entire process of Knowledge Management involves certain phases, which are strategies and processes of identifying, capturing and leveraging knowledge to enhance competitiveness.

Name :
Name of the organisation
Designation :
1. Do you have any Knowledge Management System in your organization Or any other type of system like knowledge management system

2. What do you think Knowledge Management Practices are :-
Tick all that apply

- ☐ create Knowledge
- ☑ Process or Use Knowledge
- ☑ Share Knowledge
- ☑ Store Knowledge
- ☑ Implement the stored Knowledge

2.1. Are you aware of Knowledge Management

- ◉ Yes
- ○ No

3. What is the form of your Knowledge Management System

- ○ Manual
- ◉ Digital
- ○ Mixed

4. If mixed how much is manual %

4-A. If mixed how much is digital %

5. Do you view your organization as a Knowledge based business competing in global Knowledge economy. Yes, definitely (if yes how much %)

- Yes, definitely
- No, not yet
- sometimes
- Other:

6. Knowledge Management practices within your Organisation

6.1 Knowledge Sharing (Check one response for each item)

	Applicable	Plan to use in future
A. Culture in organisation promotes knowledge sharing		
B. promotion of knowledge sharing that will lead to monetary incentives.		
C. non-monetary incentives		

6.2.Knowledge Acquisition

6.2.1 Your organisation regularly (Check one response for each item)

	Adequate	Inadequate
A. Captures and uses Knowledge obtained from other industry sources such as industrial associations, competitors, clients and suppliers		
A. Captures and uses Knowledge obtained from other industry sources such as industrial associations, competitors, clients and suppliers		
B. Captures and uses Knowledge obtained from public research institutions including universities and government laboratories		
C. encourages workers to		

	Adequate	Inadequate
participate in project teams with external experts.		

6-2.2 What are the practices that you as a user incorporate to capture Knowledge?

	Applied	Partially applied	Not applied
Best practice	◉	○	○
Lesson learnt from previous job work	○	○	○
Communication	◉	○	○
Cross project learning	◉	○	○
Global competition	◉	○	○

6-2.3 Which instruments does your organisation use to capture technological Knowledge?

	Applied	Partially applied
Database searches(e.g experts, patents, literature etc)	◉	○
Database searches(e.g experts, patents, literature etc)	○	○
Internet searches	◉	○
MAPI (Messaging Application Program Interface)	○	○
MAPI (Messaging Application Program Interface)	○	○
Lotus notes	○	○
SAP	○	○

6-2.3.A. Any other instruments does your organisation use to capture technological Knowledge? Please specify

6-3. Knowledge Transfer Training related to Knowledge Management practices within your organisation :

	In use	Plan to use in future
A. provides formal training related to Knowledge Management Practices	◉	○
A. provides formal training related to Knowledge Management Practices	○	○
B. provides informal training related to Knowledge Management Practices	○	○
C. uses formal mentoring practices, including apprenticeships	◉	○
C. uses formal mentoring practices, including apprenticeships	○	○
D.encourages experiences workers to transfer their Knowledge to new or less experienced workers.	◉	○
E. Offers off-site training to workers in order to keep skills current.	◉	○

6-3.A. what are the practices that you are using to disseminate the knowledge

	In use	Plan to put in use	Don’t know/not applicable
A. Knowledge Transfer Form	○	○	◉
B. Retention Program	◉	○	○
C. Documents	◉	○	○

	In use	Plan to put in use	Don’t know/not applicable
D.Video conferencing	○	◉	○
E. Internet	◉	○	○
F. Intranet	◉	○	○
G.Knowledge is shared in meetings	◉	○	○

6-4 Knowledge Update In your organization workers share Knowledge or information by :

	In use	Plan to use in next 24 months	Don’t know/not applicable
A. regularly updating databases of good work practices, lessons learned or listing of experts	◉	○	○
B. documentation of experience,training manuals, good work Practices.	◉	○	○

6-5 Knowledge Source Please indicate which source influenced your organization to put into effect the Knowledge Management practices that you currently use(check all that apply)

- ☑ Management (Internal)
- ☐ Non-Management workers (Internal)
- ☐ Competitors (External)
- ☑ Supply to OEMs (External)
- ☐ Professional in trade (External)
- ☑ Industrial Associates (External)
- ☑ Consultants (External)
- ☐ Customers and Clients (External)
- ☐ Other: _____

6-5.A. Which of these below fall under different sources of Knowledge types Please tick any one

	Explicit knowledge	Tacit knowledge(Which resides in human brains)	None of these
Books, Journals	◉	○	○
Innovation of new ideas	○	◉	○
Experiences	○	◉	○
Documents	◉	○	○
Human mind sets	○	◉	○
websites	◉	○	○
Unconscious values	○	○	◉
Rules and procedures	◉	○	○

6-6 Knowledge Application Incentives to implement knowledge Management Practices. What would motivate your organisation to implement or to increase knowledge Management Practices?

- ☐ Difficulty in capturing workers undocumented knowledge(know-how)
- ☐ Use of knowledge Management tools or practices by competitors
- ☐ Develop new products and services
- ☑ reduced cost
- ☑ improve customer retention and satisfaction
- ☑ To enhance brand value
- ☑ To increase the market share
- ☐ Other:

6-7 General Information on Knowledge Management practices within your organisation policies and strategies (check one response for each item)

	In use	plan to use in next 24 months	Don't know/not applicable
Does your organisation have polices or programs intended to improve	◉	○	○

	In use	plan to use in next 24 months	Don't know/not applicable
worker retention			
Are Business Process documented	◉	○	○

6-7..A. Leadership In your firm KM practices are :(check one response for each item)

	In use	plan to use in next 24 months	Don't know/not applicable
A responsibility of managers and executives	◉	○	○
A responsibility of non-management workers	◉	○	○
A responsibility of knowledge officer or KM unit	○	○	○

7. Reasons for Using Knowledge Management Practices. This section measures the reasons for using KM practices. Check ONE response for each item

	Important	Some what Important	Not at all important
A- To improve the competititive advantage of your organisation	◉	○	○
B-To help integrate knowledge within your organisation	◉	○	○
C-To improve the capture and use of knowledge from sources outside your organization.	◉	○	○
D-To improve sharing or transferring of knowledge with partners in strategic alliances.	○	○	◉
E-To increase efficiency by using knowledge to improve production processes.	◉	○	○

	Important	Some what Important	Not at all important
F-To protect your organization from loss of knowledge due to workers departures.	○	◉	○
G-To train workers to meet strategic objectives of your organization.	◉	○	○
H-To increase worker acceptance of innovations	○	◉	○
I-To improve worker retention	○	◉	○
J-To identify and to protect strategic knowledge present in your organization	◉	○	○
K-To promote sharing or transferring knowledge with clients or customers	○	◉	○
L-To increase the productivity and lowering cost and maximise the profit	◉	○	○

8. Results of Using Knowledge Management Practices. This section measures the results of using KM practices. In the table below, please indicate the level of effectiveness you attribute to these results for the KM practices currently in use in your organization. Check ONE response for each item

	Effective	Some what Effective	Not at all effective
A-Increased our knowledge sharing horizontally (across departments, functions or business units)	◉	○	○
B-Increased our knowledge sharing vertically and better decision making (up the organisation hierarchy)	◉	○	○
C-Improved worker efficiency and productivity	◉	○	○

	Effective	Some what Effective	Not at all effective
D-Improved skills and knowledge of workers	◉	○	○
E-increased our number of markets(more geographic locations)	○	◉	○
F-Helped us to add new products or services	◉	○	○
G-Increased flexibility in production and Innovation	◉	○	○
H-Prevented duplicate research and development	○	◉	○
I-Improved involvement of workers in the workplace activities	◉	○	○
J-Employees are encouraged to openly share their knowledge	◉	○	○

9. Responsibility for knowledge management practices. Which of the following area is responsible for knowledge management Practices currently in use in your organization, Check one response only

- ○ Human Resources
- ○ Information Technology
- ○ Knowledge Management Unit
- ○ Library/Documentation centre
- ○ Don't know
- ◉ Other, please specify—Respective Departments

10. Effectiveness of knowledge Management Practices, Do you measure the effectiveness of your organization's knowledge Management Practices?

- ◉ No
- ○ Yes

11. Resistance to knowledge Management Practices? Did your organisation experience significant resistance to implementing any of the knowledge management practices currently in use?

- [x] No
- [ ] Yes (if yes answer below)

11 A. What groups resisted the implementation of knowledge Management Practices currently in use? Officers and workers, Check ALL that apply

- [ ] Lack of focus from Management
- [ ] Non-Management workers
- [ ] time limitations/over burden with day today activities
- [ ] Lack of knowledge
- [ ] No Innovations and generation of ideas
- [ ] No monetory benefits
- [ ] Other:

11 B. Functions, Departments or Business Units Check ALL that apply

- [x] Information Technology
- [ ] Research and Development
- [x] production
- [x] Marketing, Sales
- [x] Engineering
- [x] Distribution, purchasing, communications.
- [x] Administration, Accounting, human resources

12. Major barriers in Implementing Knowledge Management Practices

	Important	Less Important	Not at all Important
Information Technology	○	◉	○
Not willing to share knowledge	○	◉	○
Lack of trust	○	◉	○
Knowledge sharing not a part of daily work	◉	○	○

	Important	Less Important	Not at all Important
Lack of training	○	◉	○
Lack of rewards/recognition of Knowledge sharing	◉	○	○
To extract knowledge from various resources	○	◉	○
Financial (Cost)	○	○	◉
Lack of participation	○	◉	○

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Appendix A (II)

Pilot Survey Questionnaire

Table A.1 Linkage of Questions to Objectives and Hypothetical statements

Objectives No.	Question No.	Hypothesis No.	Question No.
1	01,02,03,05,06,09,11,11A	1	01,02,03,05,06
2	03	2	03
3	6-1.1,6-1.2,6-1.4,6-1.6,7	3	08
4	08	4	07
5	07		

Appendix B

Table 1.B.1: Cronbach Alpha values

Considering the data sufficiency the following questions were taken for working.

S.No.	Name of the Scale	Cronbach Alpha (α)
1.	6.1 Knowledge Sharing	0.75
	A. Culture in organisation promotes knowledge sharing	
	B. promotion of knowledge sharing that will lead to monetary incentives.	
	C. non-monetary incentives	
2	6-2.2What are the practices that you as a user incorporate to capture Knowledge?	0.77
	A.Best practice	
	B.Lesson learnt from previous job work	
	C.Communication	
	D.Cross project learning	
	E.Global competition	
3.	7. Reasons for Using Knowledge Management Practices	0.64
	A- To improve the competititive advantage of your organisation	
	B-To help integrate knowledge within your organisation	
	C-To improve the capture and use of knowledge from sources outside your organization.	
	D-To improve sharing or transferring of knowledge with partners in strategic alliances.	
	E-To increase efficiency by using knowledge to improve production processes.	
	F-To protect your organization from loss of knowledge due to workers departures.	
	G-To train workers to meet strategic objectives of your organization.	
	H-To increase worker acceptance of innovations	
	I-To improve worker retention	
	J-To identify and to protect strategic knowledge present in your organization	
	K-To promote sharing or transferring knowledge with clients or customers	
	L-To increase the productivity and lowering cost and maximise the profit	

S.No.	Name of the Scale	Cronbach Alpha (α)
4.	12.Major barriers in Implementing Knowledge Management Practices	.91
	Information Technology	
	Not willing to share knowledge	
	Lack of trust	
	Knowledge sharing not a part of daily work	
	Lack of training	
	Lack of rewards/recognition of Knowledge sharing	
	To extract knowledge from various resources	
	Financial (Cost)	
	Lack of participation	

Note : Above questions were having higher reliability being value of Alpha was more than .60 and other questions which were below .60 were suitably revised.

Appendix C : Final Questionnaire used for the study

(Post pilot survey and post reliability and validity)

Respected sir / madam, This questionnaire is for Ph.D purpose. My topic is "An empirical study of knowledge management practices in Automobile component Industry". Please help me by filling this form. I am thankful for your valuable answers and thankful for giving your valuable time. Thanking you in anticipation. Researcher - Ms Deepali Kadam(Pisal) Faculty- BVDU, IMED, Pune
Definition of Knowledge Management System - The entire process of Knowledge Management involves certain phases, which are strategies and processes of identifying, capturing and leveraging knowledge to enhance competitiveness.

Dear Respondent –
(Please note that for all the questions
KM means Knowledge Management and **KMS** means Knowledge Management System)

Name :_____

Name of the organization/company:_____

Designation :_____

Turnover of the organization/company : _____

1.. Are you aware of KM ?

(a) Yes (b) No

2. Do you know any specific KMS ?

(b) E-Room, (b) Intranet(JOE) (c) Internet

(d) Jidnyasa (e) Subodh (f) Microsoft Navigition ver 2009 ERP System

Please Specify if there is any customized system ? ----------

3. Which of the following are key words used formally in KM ?

(Tick which is the key function)

(a) Knowledge Acquisition (b) Knowledge Mining (c) Knowledge Grooming

(d) Knowledge Creation (e) Knowledge Spread (f) Knowledge Sharing

(g) Knowledge enhancement (h) Knowledge Sharing (i) Knowledge Lounge

(j) Knowledge Capture (k) Knowledge Refinement (l) Knowledge Storage

(m) Knowledge Culturing (n) Knowledge Webbing (o) Knowledge Insighting

4. **K.M.practices within your Organisation**

4.1 Knowledge Sharing (Check one response for each item)

Give proportion of usage in % of total application

Particulars	% of Usage	Plan to use in future
A. Culture in organisation promotes knowledge sharing		
B. promotion of knowledge sharing that will lead to monetary incentives.		
C. non-monetary incentives		

4.2.Knowledge Acquisition

4.2.1 Your organisation regularly Captures and uses Knowledge
(Give Number of following from where you capture Knowledge)

Particulars	Number
A. Industrial associations	
B.Competitors,	
C.Clients	
D.Suppliers	
E. Public research institutions	
F. Encourages workers to participate in project teams with external experts.	

4-2.2 What are the practices that you as a user incorporate **to capture Knowledge?**

Give proportion of usage in % of total application

Practices to capture knowledge	% of Usage	Plan to use in future
A.Best practice		
B.Lesson learnt from previous job work		
C.Communication		
D.Cross project learning		
E.Global competition		

4-2.3 In which areas it is used from the following

Communication	Knowledge Capture	Knowledge Refinement	Knowledge disseminate
A.As a practice			
B.Manuals			
C.Meetings			
D.Cross project learning			
E.Library			
F. Internet			
G.Video conferencing			
H.Intranet			

4-2.4 Which instruments does your organisation use to **capture** technological Knowledge?
Give proportion of usage in % of total application

Instruments used	% of Usage	Plan to use in future
A.Database searches(e.g experts, patents, literature etc)		
B.Internet searches		
C.MAPI (Messaging Application Program Interface)		
D.Lotus notes		
E.SAP		
F.Project reports		
G.Dataware house/mining software		
H.Groupware		

4-2.5. Any other instruments does your organisation use to capture technological Knowledge? Please specify

_____

4-3.A.What are the practices that you are using to **disseminate** the knowledge

Means to spread knowledge	% of Usage	Plan to put in use
A. Knowledge Transfer Form		
B. Retention Program		
C. Documents		
D.Video conferencing		
E. Internet		
F. Intranet		
G.Knowledge is shared in meetings		
H.Manuals		
I.Notices		
J.Library		
K. Monographs		
L.CDs		
Any other please specify		

4-4 In your organization workers share Knowledge or information via :-

Knowledge Maintain/storage of tacit knowledge	% of Usage	Plan to use in next 24 months
A. regularly updating databases of good work practices, lessons learned or listing of experts		
B. documentation of experience, training manuals, good work Practices.		

4-5 **Knowledge Source** Please indicate which source influenced your organization to put into effect the K.M.practices that you currently use(check all that apply)

(a) Management (Internal)
(b) Non-Management workers (Internal)
(c) Competitors (External)
(d) supply to OEMs (External)
(e) Professional in trade (External)
(f) Industrial Associates (External)
(g) Consultants (External)
(h) Customers and Clients (External)
(i) other : _____

4-5.A. Which of these below fall under different sources of Knowledge types Please tick any one

Different sources	Explicit	Tacit knowledge(Which resides in human brains)	None of these
A.Books, Journals			
B.Innovation of new ideas			
C.Experiences			
D.Documents			
E.Human mind sets			
F.websites			
G.Unconscious values			
H.Rules and procedures			

4-6 Knowledge Application Incentives to implement K.M.Practices. What would motivate your organisation to implement or to increase K.M.Practices? (Check all that apply)

(i) Difficulty in capturing workers undocumented knowledge(know-how)
(j) Use of K.M.tools or practices of competitors
(k) Develop new products and services
(l) reduced cost
(m) improve customer retention and satisfaction
(n) To enhance brand value
(o) To increase the market share
(p) Others :_____

4-7 General Information on K.M.practices within your organisation policies and strategies
(Select one response for each item)

Polices and Strategies	% of Usage	plan to use in next 24 months
A.Does your organisation have polices or programs intended to improve worker retention		
B.Are Business Process documented		

4.7.(A)**Leadership**
In your firm KM practices are :(check one response for each item)

Responsibilites	% of Usage	plan to use in next 24 months
A. responsibility of managers and executives		
B. responsibility of non-management workers		
C. responsibility of knowledge officer or KM unit		

5. This section measures the reasons for using KM practices. Check ONE response for each item

Reasons for Using K.M.Practices	Very Effective	Effective	Moderately effective	Not so much effective	Not at all effective
A- To uplift the competitive advantage of your organisation					
B-To help integrate knowledge within your organization					
C-To improve the capture and use of knowledge from sources outside your organization.					
D-To improve sharing or transferring of knowledge with partners in strategic alliances					
E-To increase efficiency by using knowledge to improve production processes.					

Reasons for Using K.M.Practices	Very Effective	Effective	Moderately effective	Not so much effective	Not at all effective
F-To protect your organization from loss of knowledge due to workers departures.					
G-To train workers to meet strategic objectives of your organization.					
H-To increase worker acceptance of innovations					
I-To improve worker retention					
J-To identify and to protect strategic knowledge present in your organization					
K-To promote sharing or transferring knowledge with clients or customers					
L-To increase the productivity and lowering cost and maximise the profit					

6.This section measures the results of using KM practices. In the table below, please indicate the level of effectiveness you attribute to these results for the KM practices currently in use in your organization. Check ONE response for each item

Results of Using K.M.Practices	Very Effective	Effective	Moderately effective	Not so much effective	Not at all effective
A-Increased our knowledge sharing horizontally (across departments, functions or business units)					
B-Increased our knowledge sharing vertically and better decision making (up the organisation hierarchy)					
C-Improved worker efficiency and productivity					
D-Improved skills and knowledge of workers					
E-increased our number of markets(more geographic locations)					
F-Helped us to add new products or services					
G-Increased flexibility in production and Innovation					
H-Prevented duplicate research and development					
I-Improved involvement of workers in the workplace activities					

J-Employees are encouraged to openly share their knowledge					

7. Responsibility for K.M.practices. Which of the following area is responsible for K.M.Practices currently in use in your organization, Check one response only

(g) Human Resources
(h) Information Technology
(i) K.M.Unit
(j) Library/Documentation Centre
(k) Don't know
(l) Other, please specify

8. What are your parameters to measure effectiveness of KM Practice?
(I) Knowledge Creation
Rating from A to F(Ranking in higher order of effectiveness)

Brief description of nature of practice	Parameters	A to F
1.		
2.		
3.		
4		
5.		

(II) Knowledge Refinement
Rating from A to F(Ranking in higher order of effectiveness)

Brief description of nature of practice	Parameters	A to F
1.		
2.		
3.		
4		
5.		

(III) Knowledge Dissemination
Rating from A to F(Ranking in higher order of effectiveness)

Brief description of nature of practice	Parameters	A to F
1.		
2.		
3.		
4		
5.		

(IV) Knowledge Storage

Rating from A to F(Ranking in higher order of effectiveness)

Brief description of nature of practice	Parameters	A to F
1.		
2.		
3.		
4		
5.		

9. Resistance to K.M.Practices? Did your organisation experience significant resistance to implementing any of the K.M.practices currently in use?
(a)No (b)Yes (if yes answer below) question)

9(A). Which groups resisted the implementation of K.M.Practices currently in use? Officers and workers, Check **ALL** that apply

(h) Lack of focus from Management
(i) Non-Management workers
(j) time limitations/over burden with day today activities
(k) Lack of knowledge
(l) No Innovations and generation of ideas
(m) No monetory benefits
(n) Other: _____

9(B) Functions, Departments or Business Units Check **ALL** that apply

(b) Information Technology (b) Research and Development
(c) Production (d) Marketing, Sales
(f) Engineering (f) Distribution, purchasing, communications.
(g)Administration, Accounting, Human resource

10. Major barriers in Implementing K.M.Practices

Major implementation barriers and difficulty level for overcoming the same	High difficulty	Moderately difficulty	No difficulty
A. Information Technology			
B. Not willing to share knowledge			
C. Lack of trust			
D. Knowledge sharing not a part of daily work			
E. Lack of training			
F. Lack of rewards/recognition of Knowledge sharing			
G. To extract knowledge from various resources			
H. Financial (Cost)			
I. Lack of participation			

Any other barrier
(Please specify)_____

Thank you very much Sir/ Madam

Appendix D

Indicative table of contents of Literature Review

Sr. No	Year	Source	Title	Author	Contents	Remark
1	2007	F. Tunc Bozbura, (2007) "Knowledge management practices in Turkish SMEs", Journal of Enterprise Information Management, Vol. 20 Iss: 2, pp.209 - 221	Knowledge management practices in Turkish SMEs	F. Tunc Bozbura, (Department of Industrial Engineering, Bahcesehir University, Bahcesehir, Istanbul, **Turkey**)	*Purpose* – Aims at finding out the senior managers' perceptions about the extent to which the components of KM contribute to the success of SMEs (small and medium enterprises) in Turkey. *Findings* – The results of the survey show that Turkish SMEs do not like to share knowledge even within the company. The managers are afraid of losing the control of knowledge. However, since they close the information channels, they also prevent the incoming knowledge. OECD (2003) research model (Organisationfor Economic Co-operation and Development) 4	Research Methodology

					categories 1. Communication 2. Training and mentoring 3. Policies and strategies 4. K capturing and acquisition	

Sr. No	Year	Source	Title	Author	Contents
2	2008	Knowledge and Process Management Volume 15 No.3 pp 203-210	Information Technology Strategy for Knowledge Management in Indian Automotive Components SMEs	Rajesh K.Pillania	IT is the faci Information KM.
3	2010	International Journal of Information Technology and Knowledge Management July-Dec 2010 Vol 2 No 2 pp 627-631	Impact of Knowledge management practices in Indian Automobile Industry- An Empirical Investigation	K.Karthikeyan & R.Rengaraj	Researcher p of five speci 1.Knowledg Knowledge Knowledge Organisation systems. Th pointed out. Pg 631 SAP Analysis, Co
4	2009	Journal of Knowledge management practice Vol 10 No 4 Dec 2009	Knowledge management Enablers towards successful New product development : A case study in semiconductor manufacturing firm	Chong Hai sin, Gerald Guan Gan Goh, Uchenna Cyril Eze, Multimedia University, Melaka, **Malaysia**	Four broad c identified fr are strategy culture, peop

Sr. No	Year	Source	Title	Author	Contents
5	2010	Journal of Knowledge management Vol 9 No 1, 2010 pp 41-53	Impact of Knowledge management on small and Medium sized organizations in **Sudan**	Nour-Eldin Mohamed Elshaiekh and Peter Charles woods, Faculty of creative multimedia.	This research Sudanese sm not capable e to get require
6	2004		Intranets and Knowledge Sharing	James Robertson	Using the Int
7	2010	The Electronic Journal of Knowledge management Vol 7 Issue 2 pp 211-218	Success Factors in Implementing Knowledge Based Systems	Arntzen Bechina A.A, Buskerud Univerity, Norway, Nkosi Ndlela Hedmark University College, Rena, **Norway**	KMS effectiv training, clea business goal collaboration -ICT
8	2010	The Electonic Journal of Knowledge management Vol 8 Issue 1 pp 161-170	Measuring the effects of Knowledge management practices	Geoff Turner and Clemente Minonne, University of Nicosia, Crypus, University of South Australia, Adel aide, **Australia**	Organisationa (OKM),Orga Management Management needs to be c corporate stra targets. The given Cultura integration, P organization Four forms o 1. Cultu becon overa 2. It enc know applic and ca syste practi revie comm 3. Metho integr KM p intens way a org. p produ Some **(25%**

					comm rotatio action techn includ platfo yellow exper 4. **(20%** aim o in the busine of pro avoida 5. **(22%** endea organ dedica organ Some centra respon profit 50% of respo KM strategy, strategy was corporate stra participants v was practiced third of the re practising KM the short or m remainder co Unfortunately KM admitted performance measurement skills to deve To understan organisation' recommednd is essential to measure perfo groups a) effe improvement efficiency (pr improved bus of the study i KM strategy particularly o

					it can be oper compared to expressed, fo **creation**.
9	2010	The ICFAI Journal of Knowledge management	A study on Knowledge management Practices of Auto Component Manufacturing Companies in Ludhiana City	S K Chadha and Deepa Kapoor	The research companies ac KM, there sti sharing. K sh routine work, implementati emerged as th method for kn Data manage support syste the employee one of the mo the work perf However, onl is not enough performance, culture of sha
10	2012	Journal of Organisational Knowledge Management	Awareness: A study of Knowledge Management Adoption amongst **Iranian** SMEs	Naser Valaei and Kamarulzaman Ab.Aziz	Author has gi technologies bookmarking region, some knowledge sh business activ illegal in Iran policy maker implementing need of high technological
11	2006	Journal of Knowledge management Practice,Vol.7, No1, March 2006	Operational Knowledge management Design in Total Quality Management: Small and Medium Size Companies	Jose Teba Fernandez, University of Seville, Sebastian Lozan Segura,Jose Luis Salmeron , Jesus Racero Moreno, University Pablo de Olavide at **Seville**	Complex tech neural networ heuristic tech useful tools i generally wel **Sharing :** In disciplinary p have to respe or idea you ha save it. In thi sharing proce efficient.
12	2007	5th International CALIBER 2007, Panjab University, Chandigarh 08-10 Feb 2007	Impact of Information Technology (IT) on Knowledge Management (KM) : A Study	Payare Lal and G.S Thakar	Software play Management does not solv having nothin must be taken

13	2002	White Paper	Knowledge Managemetn Best Practices	Primus Knowledge Solution	**Six best prac** Make Know part of the wo Provide acc Knowledge a Obtain the s the top down Address the c management Recognize a Knowledge p Monitor perfo continuous in
14	2011	*African Journal of Business Management Vol.5(2),pp,332-339*	Designing a model for evaluation of Knowledge management level in industrial organization of Iran (Auto industry)	Keyvan Shahgholian and Hamid Hajihosseini	The applicati Evaluation of
15	2008	*Journal of Knowledge Management practice, Vol.9, No.*	A Framework for Tacit Knowledge transfer in a virtual team environme nt	Brenda C. Ledford, Zane Berge, University of Marryland, Baltimore County	Types of Kno
16	2007	*Journal of Knowledge Management practice, vo. 8, No.2*	Understanding D ata, Information,Knowl edge and their Inter-relationships	Anthony Liew, Walden Univesity	Definitions a Data, Informa Inter-relation
17	2009	*Journal of Knowledge Management practice, vo. 10, No.1*	A Review on Knowledge Management Discipline	Mostafa Jafari, Peyman Akhavan, Ashraf Mortezaei, Iran University of Science and Technology, Tehran	-Table 2: Fra Implementati - Knowledge - Architecture
18	2007	*Journal of Knowledge Management practice, vo. 8, No.2*	Conceptual Framework for Knowledge Management in Reverse Enterprise System	S.Wadhwa, J.Madaan, Indian Institute of Technology	- Acquiring K technologies. - Knowledge
19	2006	*Fujitsu Sci.Tech.J42,3p.364-368*	Application of Knowledge Management to	Kazuo Hasono	-Sharing -Information members in n

			System Development		-Communica scale project.
20	2005		Information Systems in Small and Medium Enterprises (SMES) in India	Susan Sharma and Sudhir Jain	Limitations : bigger.
21	2004	*Academy of International Business (AIB), India, 4th International Conference on Globalization and Sectoral Development*	Knowledge Management: Areas to Focus and Challenges Ahead.	Naim Ahmed, Anirban Chakrabarty, Parkha Kaul	Steps in KM
22	2006	*The IUP Journal of KM,* *The ICFAI University Press*	Knowledge Sharing in Academic Institutions Technology for Sharing Research Output, CourseWare and Learning Resources	Gayatri Doctor	-Digital Repo Sharing.
23	2009	*Journal of Knowledge Management practice, vo. 10, No.1*	A Framework for the selection of knowledge Mapping Techniques	Mostafa Jafari, Peyman Akhavan, Atieh Bourouni,Roozbeh Hesam Amiri, Iran University of Science and Technology, Tehran	
24	2009	*Journal of Knowledge Management practice, vo. 10, No.2*	Knowledge Management for 21st Century Information Professionals	Priti Jain, University of Botswana	Creating Kno awareness wi
25	2009	*Journal of Knowledge Management practice, vo. 10, No.1*	ICT – Driven Knowledge Economy In Bangladesh: Issues and Constraints	Mohammed S.Chowdhury, Zahurul Alam	
26	2007	*Journal of Knowledge Management practice, vo. 8, No.1*	A Framework for Discovering KM Forces : The Fifth Element	Khalid Samara, London South Bank University.	SECI model
27	2006	*Journal of Knowledge Management practice, vo. 7, No.3*	Knowledge Management in Malaysian Banks : A new Paradigm	Hafizi Muhamad Ali, Nor Hayati Ahmad, Unicersity Utara	- Knowledge Definitions -Benefits -e-libraries, d

				Malaysia	-explicit and
28	2009	*Best Practices in KM for Customer Service*	Knowledge Management for "Stand-Out" Customer Service	Ashutosh Roy, eGain Communications	Six Best Prac
29	2010	*Journal of Information and Knowledge Management, Vol 9,No.2*	Cultural Perspectives on Knowledge Management in Central and Eastern Europe : The SECI Model of Knowledge Conversion and 'Ba'	Mattew Jelavic,Kristie Ogilvie	SECI Model
30	2008	*The ICFAI University Press*	An Explanation of Individual Knowledge and Behavior Based om Empirical Substrata	Liang Zhao and Xian Chen Zhu	
31	2010	*Journal of Information and Knowledge Management, Vol 11,No.2*	Beyond the tacit-Explicit Dichotomy: Towards a Conceptual Framework for Mapping Knowledge Creation, Sharing and Networking	Farooq Mughal	Tacit and exp
32			The Evolutionary Design of a Community Information Service Knowledge Network	Ruzaif Adli Md Daud	
33	2009	*Journal of Information and Knowledge Management, Vol 10,No.4*	Knowledge Management Enablers toward Successful New Product Development: A Case study in a Semiconductor Maufacturing Firm	Chong Hai Sin, Gerald Guan Can Goh, Uchenna Cyril Eze.	-KM critical -11 key comp -table 1. Sum enablers/criti -Corporate C
34	2006	*Journal of Knowledge Management, Vol 7,No.1*	Implementing Knowledge Management : A Practical Approach	Helen Gillingham, Bob Roberts	Gap Analysis A Gap analys with the curre
35	2003	*Midwest Research to*	Calculating,	Joseph A.Gliem.,	Cronbach Alp

		Practice Conference in Adult, Continuing and Community Education.	Interpreting and Reporting, Cronbach's Alpha Reliability Coefficient for Likert-Type Scales	Rosemary R.Gliem	Likert-Type S
36		*Statistics Data Analysis and Data Mining*	An Introduction to computing and interpreting Cronbach Coefficient Alpha in SAS	Chong Ho Yu, Arizona State University	
37	1989	*The Academy of Management Review*	Building Theories from Case study Research	Kathleen M. Eisenhardt	
38	2001	*Science, Innovation and Electronic Information Division*	Knowledge Management Practices		
39		*Journal of Knowledge Management, Vol 10,No.4*	Factors influencing knowledge productivity in German research groups : lessons for developing countries	Junix Wang, Hans Peter Peters, Jiancheng Guan	Limitations o small sample one research results canno thus has to be
40	2005	*World Library and Infromation congress: 71th IFLA General Conference and Cou ncil*	Knowledge sharing practices in Asian institutions: a multi-cultural perspective from Singapore	Abdus Sattar Chadhry	Chadhry and considerable **knowledge c knowledge s** Neo(2002) in practices in a **factors have individual's knowledge.** motivation, m teamwork spi **barriers to k Ang (2002)** T policies to ass would not dis knowledge. I appropriate re put in place t create a clima **Chua (2002)** career advanc appraisal wer called'kiasuis sharing know phenomenon

					to knowledge **Chong(2003)** taking place to face comm work groups. **Author** says knowledge th were willing knowledge th written comm more effectiv encounters, e and other info notes, chats o electronic dis Knowledge s highlights the creativity to knowledge m **Managers m** **capable of m** **discussions a**
41	2011	*American Journal of Economics and Business Administration 3(4) : 636-644*	A study of Knowledge Management Process Practices in Very Small Software Companies	Shuib Basri and Rory V.O'Connor	
42			Knowledge Management : The Essence of the Competitive Edge	Moya K.Mason	Why KM?
43			Knowledge Management for Small Medium Enterprise : Capturing and Communicting Learning and Experiences	Cynthia Chin Tian Lee, Charles Egbu, et.al	
44	2006		Survey of Knowledge Management	M.D.Singh, Ravi Shankar et.al	The new wor organizations organizations

			practices in Indian manufacturing industries		emphasis on organization from **interna**
45	2010	*The Turkish Online Journal of Educational Technology Vol.9, Iss 4*	A process based knowledge management system for schools : A case study in Taiwan	Chi-Lung Lee, His-Peng LU et.al	Sharing mode
46			knowledge management System for Cluster Development in Small and Medium Enterprises	Pradorn Sureephong, Nopasit Chakpitak et.al	Sharing mode management be useful tool collaborative According to framework [N knowledge cr companies cr innovation', C 1995]. The in explicit and t creation of ne **Socialization** of Knowledg ever producin to support suc or brain storn **Externalizat** its nature, tac convert into e support such knowledge or technologies. Combination Explicit knov meeting, via support such tacking or dat Internalizatio order to act o have to undrs involves crati Tools to supp document ma system.
47	2010	*Journal of Information and Knowledge Management, Vol.9,No 2 pp145-159*	Knowledge Sharing in Virtual Teams in Malaysia : Its Benefits and Barriers	Manivannan Senthil Velmurugan, Kogilah et.al	Problems are perspectives organization tools used to virtual teams.

					Author has f faced by virt individual un limitations ar organizationa
48	2006	*Journal of Knowledge Management Practice, Vol.7,No 2*	An Approach to integrating Knowledge Management into the Product development Process	Qianwang Deng, Deji Yu	Linking KM development
49	2004	*Journal of Knowledge Management Practice.*	Use of Simulation Experiments to evaluate Knowledge Management Modeling Quality	Anitha Srinivasan, Barry Horowitz	Pg.4 Table
50	1998		Knowledge Management solutions – The IT contribution	Dr.David Skyrme	-IT technolog -pg 2 ICT too -Document M KM processe new products provide a sign compared wit added produc the effect the process innov
51	2007	*Journal of Knowledge Management Practice, Vol.8, No 3*	The Importance of the four knowledgeManage ment Styles to Industry : Using the HSD Post Hoc Test	Maen Al-hawari	
52			Knowledge Management in Automobile Industry	Joao Ferreira	-ontology -K repository
53	2006		The Effect of Knowledge Management Context on Knowledge Management Practices : an empirical Investigation	Brian Detlor, Umar Ruhi	-Likert scale -At a theoreti empirical evi relationship b of knowledge organization knowledge sh employees
54	2006	*Journal of Knowledge Management Practice, Vol.7, No 3*	Empirical Study Based Evaluation of KM Models in	Lewlyn L.R Rodrigues, R.S Gayarhri,et.al	KM is the Ov Process and T

			the IT Sectors : Implications for Quality Outcomes		
55	2010	*Journal of Information & Knowledge Management, Vol.9, No 1*	Unstructured Knowledge Transfer in ICT Teams	Raija Halonen and Elisa Laukkanen, Thomas Acton and Kieran Conboy	Organisations but also creat they apply ne the problems through the a Thus, knowle a spiral of see Further, ba is necessary con that, ba must contexts so th A good ba giv be free of the externalize th (Nonaka and
56	2001	*Global Co-operation in the New Millennium, The 9th European Conference on Informtion Systems*	Barriers to effective knowledge management Action research meets grounded theory[Case study]		**Recommend** Improving do made. -Knowledge recommended should be cre relevant past sharing of go
57	2008	*The Icfai University, Journal of Knowledge Management Vol VI, No.5, 2008*	Does Organisation Size Matter for Starting Knowledge Management Program?	Parag Sanghani	Statistical Te
58	2009	*Journal of Knowledge Management, Vol.10, No 2.*	Implementing Enterprise 2.0 knowledge Sharing Tools in An Eastern European Consultancy	Sara Bocaneanu	-Eastern Euro Enterprise 2.0 - Enterprise 2 introduced to knowledge m companies. The tools inc and social au examines hov -Andrew McA Enterprise 2.0 website(Case in online com companies to The website h 2007, but to c studies which sketched.
59	2011	*Vishwakarma*	A study of the	Dr.Aditi Markale	

		Business Review Vol I pg 73-77	Knowledge Management Systems in Software Dependent Organisations		
60		*The website for business and organisational storytelling*	Technology for knowledge management	Steve Denning	Electronic da recordings, in presentations extend the tec disseminating
61	2010	*Journal of social sciences 6(2) : 256-264.*	The social technical view of knowledge management in Services Industries	Choong Kwai Fatt and Edward Wong Sek Khin	Success facto
62	2004		The 3cs of Knowledge Sharing	David Skyrme	Seven incenti
63	2006	*Journal of Knowledge Management, Vol.10, No 1,pp.32-43*	Knowledge Management at SMEs; Five Peculiarities	Desouza K C and Awazu Y	
64	1998	*Harvard Business School Press, Boston*	Working Knowledge : How Organisations Manage What they know	Davenpoet T H and Prusak L	
65	2000	*Unpublished academic dissertation*	An Empirical Study of FactorsAffecting Successful Implementation of Knowledge Management	*Choi Y.S*	
66	2008	*Journal of Knowledge Management, Vol.10, No 1,pp.32-42*	Knowledge management at SMEs: five peculiarities	*Kevin C.Desouza and Yukika Awazu*	
67	2005	*Industrial Management and Data Systems Vol 105, No 3, pp 261-279*	Critical success factors for implementing knowledge management in small and medium enterprises	*Kuan Yew Wong*	

- http://hsc.unm.edu/library/kmit

-http://www.knowledgebaoard.com/item/2917., KM best practices : Comparing apples to apples-Knowledge board APQC's framework.

-Knowledge Management ., Best Practices in KM by Madammohan Rao

-Annex 2: German Pilot Questionnaire., Knowledge Management in German Industry, in the Framework of the OECD Study.

-http://www.nsftools.com/misc/WhatIsNotes.htm

- CFL OECD Knowledge Management Project Report – Danish pilot survey

-www.angelfire.com/pop2/tai/method.htm

- Knowledge Management Practices at Toyota Motors.

-Intranets and Knowledge sharing- By James Robertson (Sharing ,using Intranet to drive, Cultural Change)

-International tracking survey report 03, Knowledge management and Technology, by Thomas Riley, University of Glasgow (Sharing)

Appendix E

Glossary of terms used in knowledge management

Vernon Prior is a leading practitioner in competitive intelligence (CI) and knowledge management(KM). Over the past 20 years he has presented training programmes in Australia, Brazil, Brunei,Hong Kong, India, Japan, Malaysia, New Zealand, the Philippines, Singapore, Thailand, and the United Arab Emirates.

He has had more than 200 articles published internationally, in newspapers, journals, magazines,

and on the Internet. His glossary of terms used in CI and KM is widely available online, including at the following sites: www.themanager.org, www.markintell.com, www.swisscia.org, www.quantumiii.co.uk, www.quantum3.co.za, www.mindshifts.com.au, www.intellonet.com, www.adler-ls.com, www.scip.org, www.knowledgeboard.com, and http://escc.army.mil/index.htm.

Algorithm is a process or set of rules for making calculations or solving problems, especially when using computers.

Alliance is a form of cooperation between two or more independent companies in which they share risks and revenues with the aim of jointly improving their **Competitive advantage**. Alliances may include licensing, clusters, co-marketing arrangements, shared R&D, joint ventures, franchising agreements, outsourcing partnerships, and investments.

Annotation is a note, usually added to a **Bibliographic reference**, by way of comment, explanation, or description. It may also be referred to as a Scope note when used in a **Thesaurus**.

Applied research focuses on the use of existing scientific principles in order to solve a particular problem or develop new products or applications.

Archie is a software tool for locating files stored on anonymous **File transfer protocol** (FTP) sites; knowledge of the exact file name or a sub-string is essential to successful retrieval.

Artificial intelligence applies to a computer system that is able to operate in a manner similar to that of human intelligence; that is, it can understand natural language and is capable of solving problems, learning, adapting, recognizing, classifying, self-improvement, and reasoning. Examples of its application include **Intelligent agents, Neural networks**, and **Robotics**.

Assumption is that which is taken as being true for the purpose of argument or action.

Authentication is the process by which an individual confirms his or her identity, usually by means of a signature, an official **Document**, a personal identification number (PIN), a **Password**, a digital certificate, or some other acceptable means.

Balanced scorecard is a performance measurement system that, in addition to financial measures, quantifies items that had previously been considered as intangible assets, such as brand image, customers, reputation, **Human capital**, **Information**, **Innovation**, and **Corporate culture**.

Benchmarking is a continuous, systematic process for evaluating and comparing an organization's activities, products, services, and work processes with those of organizations that are recognized as representing best practices for the purposes of performance improvement. A secondary purpose is to reveal useful practices or ideas that may be adopted or adapted with advantage.

Bibliography is a list of documents (for example, books, periodicals, articles, reports, and conference papers) covering a specific subject or range of subjects, arranged in some order, such as by subject, chronologically, or by author. Its function is to identify, locate, or select material, and is primarily

compiled for use by scholars and librarians. The essential content should include author, title, and keywords. For purposes of location it should also incorporate edition, date, and location.

Blog is a direct means for an individual to share ideas, thoughts, opinions, and **Information** concerning a particular topic with an audience, using the Web as the medium. It usually takes the form of a diary or **Narrative** (in reverse chronological order) initiated, and frequently updated, by the *blogger*. Its main value lies in the establishment of networks and the **Social capital** created as a result, and usually comprises ephemeral material.

Brainstorming is a technique used by groups of people to overcome the widespread tendency to overlook various obvious options while solving problems or generating new ideas. The key principle is to defer judgment, achieved by insistence on first recording all suggested ideas.

Bulletin board system (BBS) is a computerized meeting and announcement system that allows people to carry on discussions, upload and download files, and record observations and points of view without having to be simultaneously connected to the system at any given time.

Business environment encompasses all those factors that affect a company's operations; including customers, competitors, suppliers, distributors, industry trends, substitutes, regulations, government activities, the economy, demographics, social and cultural factors, innovations, and technological developments. It may also be referred to as Operating environment.

Business intelligence is concerned with **Information technology** solutions for transforming the output from large **Data** collections into **Intelligence**; usually through the integration of sales, marketing, servicing, and support operations. It covers such activities as **Customer relationship management**, **Enterprise resource planning** and Ecommerce using **Data mining** techniques.

Those people involved in business intelligence tend to regard it as one aspect of **Knowledge management**. Systems based on business intelligence software were formerly known as Executive information systems.

Business process management (BPM) involves the use of appropriate tools and techniques to design, analyse, and manage operational business processes and, where possible, to improve those processes. The term business process refers to repetitive activities performed in the context of an organization's normal, everyday operations.

Business technology refers to the integration of computer and communications technologies in support of administrative applications and procedures within an organization.

Case-based reasoning is a technique for deriving solutions to problems through a reasoning process using **Artificial intelligence** to produce analogies with similar problems where solutions are already known.

Cluster analysis is based on the classification of **Data** or objects into groups that are related in some way. It is commonly used in **Data mining**, pattern recognition, image analysis and bioinformatics. The practice is particularly useful in such activities as **Brainstorming**, and the rational exploitation of **Mind maps**, and **Search engines**.

Cognitive science is the study of thinking, knowing, and intellectual reaction; of the process of comprehending, judging, remembering, and reasoning; and of the acquisition, organisation, and uses of **Knowledge**.

Collaboration software refers to a broad selection of software that is designed to enable collaboration, cooperation, **Networking**, and information-sharing activities through computer **Networks**. Collaboration software may be designed to execute some or any combination of the following: **Electronic mail**; meetings management; project management; **Team** scheduling;

Distance learning; discussion groups.

Combination, one of the four basic **Knowledge management** processes, is a technique for combining items of **Explicit knowledge** to form new explicit knowledge.

Communication is the process whereby **Knowledge** is codified into **Information** by the transmitter, passed through a medium to a receiver, who then reconverts that information into new knowledge.

Community of interest is a group of people who are committed to the mutual exchange of ideas and **Information**. The focus tends to be on **Learning** about areas of common interest, rather than on producing practical results.

Community of practice (CoP) is an informal, self-organising, interactive group that develops in response to a specific, work-related activity, subject, practice, or problem of mutual interest. Membership is determined by participation and may transcend hierarchical and organizational
boundaries. It provides a means for developing best practices or solutions to problems through **Communication**, that is, through participation in the exchange of **Information** and the creation of **Knowledge**. A community of practice may use a variety of media for this purpose, including face to-face meetings, reports, email, instant messaging, collaborative workspaces, and intranets. Communities of practice can sometimes make a major contribution to **Social capital** in organisations. A CoP may sometime be called a Community of purpose or commitment, and a large, geographically dispersed community is often referred to as a **Network of practice**.

Competitive intelligence is a systematic and ethical programme for gathering, analyzing, and managing any combination of **Data**, **Information**, and **Knowledge** concerning the **Business environment** in which a company operates that, when acted upon.

Computer-aided design (CAD) involves the use of computers in the design and engineering process. The term embraces geometric modeling, **Analysis**, testing, and drafting.

Computer-aided instruction (CAI) refers to the use of computers as teaching machines.

Computer-aided manufacturing (CAM) involves the use of computer technology in the management, control, and operation of the manufacturing process.

Corporate culture is the set of values, beliefs, and relationships between individuals and functions that guide the decisions of the company in order to achieve its objectives. It results in behavior that has been learned within a group or transferred between individuals over time. It may also be referred to as Organizational culture.

Corporate performance management, also known as Business performance management, is software that usually handles a number of basic applications, such as: budget planning and forecasting, financial consolidation, financial and statutory reporting, profitability analysis, and **Balanced scorecard**. It is frequently associated with some form of **Enterprise resource planning** software.

Crawler uses existing **Internet** search engines to carry out automatic search and retrieval of selected **Information** on behalf of a user. It may also be known as Web crawler.

Creative industries comprise those organisations that engage in activities that have their origin in individual creativity, skill, and talent, and that have the potential for wealth and job creation through the generation and exploitation of **Intellectual property**.

Customer relationship management (CRM) is a software-based technique designed to select and manage customers in order to maximize their long-term value to an enterprise. The term covers several aspects of customer relationships, such as: campaign management systems, call centers, interactive voice response systems, e-commerce, point-of-sale, and sales automation. The intention is to understand and anticipate the needs, preferences, and buying habits of existing and potential customers. To that end, it usually employs some form of **Data mining** designed to exploit large customer databases. CRM is seen by some as the most important aspect of **Knowledge management**.

Dashboard is a **Visualisation** tool that provides graphical depictions of current **Key performance indicators** in order to enable faster response to changes in areas such as sales, customer relations, performance assessments, and inventory levels.

Data consist of unconnected facts, numbers, names, codes, symbols, dates, measurements, observations, words, and other items of that nature that are out of context, and that only acquire meaning through association.

Data mining is the systematic computer **Analysis**, through the use of statistical techniques (often employing **Neural networks**), of large volumes of collected **Data** with the aim of revealing previously unidentified patterns, trends, and relationships about customers, products, services, and other activities that can lead to new and profitable business **Opportunities**. As with any **Database**, the essential aspects are to do with accurate, up-to-date content, and with the means used for locating and matching that content to user needs. In other words, the level and quality of the associated intellectual input is critical. For these reasons the procedure is complex and protracted,calling for specialised expertise and imagination. Data mining is also known as Databasetomography, Discovery informatics, or **Knowledge discovery** (all of which are slightly broader terms). Examples of data mining applications include: identifying new customers, predicting customer buying habits, confirming suitable loan applicants, revealing fraud, indicating potentially

rewarding investments, managing equity portfolios, diagnosing medical problems, managing inventory, and conducting certain aspects of **Marketing**.

Data warehouse is a repository of operational **Data** from one or more sources within an organisation, together with data derived from a variety of external sources that have been arranged into meaningful **Information**, and rendered easily accessible so as to allow for effective **Analysis** or decision-making.

Database is a collection of interrelated **Data** stored together without harmful or unnecessary redundancy and structured in such a manner as to serve one or more applications. The data are stored so that they are independent of programs that use the data.

Decision diary records decisions made, together with any assumptions made and the reasoning employed. It is used to derive lessons to assist future decision-making.

Decision tree is a graphical representation of the **Analysis** of sequential decisions and their likely outcomes.

Document contains recorded human **Knowledge**, in any format; or is **Information** structured in such a way as to facilitate human comprehension. Essential elements usually include: the identity of the originator(s), one or more addressees, a title, the date of origin, relevant information, and – where feasible – one or more signatories.

Document management system is a computer-based technique for storing and retrieving documents held in a wide variety of formats or in a number of geographic locations. Many systems allow for the control and recording of changes to **Documents**, as well as a measure of the volume of use. A document management system may also be referred to as a Record management system.

Electronic commerce covers a range of activities under which businesses and their customers can carry out transactions electronically between computer systems. This greatly reduces costs and improves efficiency. The more popular term is e-commerce.

Embodied knowledge is that **Knowledge** which is incorporated in a product although not explicitly identified. It is integral to equipment or materials; for example, the technological knowledge contained in a modern household appliance, a vehicle, or a recording device. Embodied knowledge can often be deduced through **Reverse engineering**. It is sometimes loosely referred to as **Implicit knowledge.**

Enterprise content management refers to the use of appropriate technology, software, and methods to create, collect, manage, store, retrieve, and disseminate content of any kind, including **Documents** and **Unstructured information,** within an organisation in order to better achieve the aims and goals of the enterprise. The practice is sometimes inappropriately referred to as Enterprise search.

Enterprise information portal (EIP) is a term used to describe both the home page of an organization's **Intranet** and the intranet itself, together with its content. Users typically have access to the system from a personal starting page.

Enterprise resource planning (ERP), also known as Professional services automation (PSA), is a software-driven technique that is intended to optimize the use and application of resources (project management) and manage mission-critical processes (such as workflows, time and expense reporting, collaboration, and **Knowledge** capture). The software often incorporates **Corporate performance management** software.

Enterprise systems aim to overcome problems with incompatible **Information** storage and retrieval systems by introducing a common format for databases within companies. Proprietary processes need to be tailored to

meet the needs of the enterprise systems, necessitating management and structural change.

Executive information systems (EIS) are now commonly referred to as **Business intelligence** systems.

Experimental development involves systematic work using **Applied** or **Basic research** or practical experience for the purpose of creating new, or improving existing, materials, devices, products, processes, or services.
Expertise locator software, available at various levels of sophistication, may be used in the compilation of a **Knowledge map**.

Expertise profiling is a technique for identifying and classifying personal **Knowledge** and expertise for use in a **Knowledge map**. It is usually achieved either through manual completion of standard forms, or by inference from the content of documents produced by the individuals concerned.

Explicit knowledge consists of anything that can be codified, or expressed in words, numbers, and other symbols (such as plans, marketing surveys, customer lists, specifications, manuals, instructions for assembling components, scientific formulae, graphics) and can, therefore, be easily articulated, usually in the form of **Documents**, processes, procedures, products, and practices.

Externalization is the conversion of **Tacit knowledge** to **Explicit knowledge** by means of language or **Visualisation**.

Extranet is that portion of an organization's **Intranet** that is accessible by selected individuals (for example, collaborators, suppliers, partners, major customers).

Folksonomy is a user-generated **Taxonomy** used to **Classify** and more readily retrieve specific **Documents** (including Web pages, images, links, and other content). A folksonomy should ideally be originated by, and easily accessible to, its primary users. Because they suffer from low levels of **Precision** and **Recall**, folksonomies are more often used in collaborative or social tagging, social bookmarking, social classification, or social indexing, rather than in a business setting. Nevertheless, they may be useful in small, innovative teams or in emerging subject areas.

Fuzzy logic is a software program that operates at a high level of abstraction and is able to handle conflicting demands. Typical engineering applications may be found in automatic transmission systems that are able to run more smoothly, and in subway trains that are able to start and stop without jerking. Other applications include **Text mining** and **Case-based reasoning**.

Gisting is the art of concisely reducing complex material to its absolute essence for intelligence reporting purposes.

Grey literature refers to material that is not formally published, such as institutional or technical reports, working papers, business documents, conference proceedings, or other documents not normally subject to editorial control or peer review. It may be widely available yet difficult to trace. **Trade literature** comes under this broad heading.

Grid computing refers to the automated sharing and coordination of the collective processing power of many widely scattered, robust computers that are not normally centrally controlled, and that are subject to open standards. Other terms employed in this context include: Autonomic computing, Data-centre virtualization, On-demand computing, Public resource computing, and Utility computing.

Group technology is a coding and classification technique that groups parts according to geometric or manufacturing characteristics; used to facilitate **Computer-assisted process planning**.

Hard information is quantitative in nature and generally consists of facts, statistics, and other formally published **Information**.

Hierarchical classification is a method of grouping in which terms are arranged from general to specific; that is, in which the structure is initially arranged in broad groups that are then successively subdivided into narrower groups.

Horizontal organisation is one that seeks to reduce the number of layers of management and facilitate the development of a flatter, more responsive and productive organisation. Teams are allocated to, and made responsible for, specific business processes. This ensures that decisions are made more quickly and in a manner more consistent with business objectives. The technique is particularly useful in multinational organisations, because it helps to link disparate and geographically dispersed operations.

Implicit knowledge is that which is not directly expressed; that is, the meaning is inferred from the context and, therefore, relies on existing knowledge.

Index is a systematic guide to the content of one or more documents arranged in some chosen order (usually alphabetically), together with associated location elements (for example, topic description and page numbers in a book, or **File** titles and identification numbers in a filing system).

Indexing provides a means of labeling documents using freely selected keywords or phrases (natural language) or authorized descriptors from a **Taxonomy** or **Thesaurus** (**Controlled vocabulary**), or any combination of those, together with some means of indicating its location in the system.

Induction is based on experience and experimentation. It involves reasoning from the particular to the general; for example, reaching a conclusion by ascribing identical properties to all members of a class of things by examining only a limited number of those things. Any conclusion must be based on a particular set of observable facts. Possible techniques include: illustration by example; enumeration of particulars and details; definition; elaboration by comparison and contrast; any combination of these.

Industry profiling provides an in-depth description of an industry and its key players. Significant elements to be considered might include: Overview; Critical matters which may affect the industry (such as industry threats and challenges, trends, developments, and new technologies, and relevant legislation); Industry statistics; Existing and potential industry opportunities; Industry, trade, and professional associations.

Information consists of **Data** arranged in some sort of order (for instance, by classification or rational presentation) so that they acquire meaning or reveal associations between data items. Information may also be defined as a physical surrogate of **Knowledge** (language, for instance) used for communication.

Information architecture is concerned with the creation and organisation of a **Web site**.

Information management is the means by which an organisation maximizes the efficiency with which it plans, collects, organizes, uses, controls, stores, disseminates, and disposes of its **Information,** and through which it ensures that the value of that information is identified and exploited to the maximum extent possible. The aim has often been described as getting the right information to the right person, in the right format and medium, at the right time. It is sometimes referred to as: Enterprise information management, Information resources management, or **Business intelligence**, especially in connection with relevant software.

Information retrieval involves the identification, location, and collection of specific **Documents**, **Information** contained within those documents, or **Metadata** describing those documents, from any suitable source.

Information system refers to the applications and software that perform business functions or support key processes. Performance criteria concern the quality and functionality of the software, its flexibility, and the speed and cost of development and maintenance.

Information technology is the acquisition, processing, storage, and dissemination of vocal, pictorial, textual, or numerical **Information** using computers and telecommunications. It is mainly concerned with the flow of information through networks. Primary criteria for business performance are ease of use, reliability, and responsiveness.

Innovation, a major focus of **Knowledge management**, incorporates all those activities necessary to adopt or diffuse an existing **Technology**, or transform an idea or **Invention** into a problem solving or marketable device, process, product, service, or technique. It usually occurs as a result of a combination of **Explicit** and **Tacit Knowledge**. Innovation is sometimes referred to as Knowledge conversion. It has been shown that successful, innovative firms have certain characteristics in common; these include:

 excellent communications (particularly with the outside world);

 a willingness to seek **Information** from the most profitable sources and share it, both internally and externally (through, say, joint ventures or licensing agreements);

 the provision of appropriate rewards for identifying and exploiting new ideas.

Intellectual capital refers to the total **Knowledge** within an organisation that may be converted into value, or used to produce a higher value asset. The term embodies the knowledge and expertise of employees; brands; customer information and relationships; contracts; internal processes, methods, and technologies.

Intellectual property refers to the definition and recording of a novel device, product, process, or technique so that it may be bought, sold, or legally protected. The main forms of protection take the form of **Copyright**, licenses, patents, registered designs, trademarks, and trade secrets. It is that portion of **Intellectual capital** that can be protected by law.

Intelligence audit is an examination of an organization's current level of **Intelligence** activities with the objective of improving those operations in order to gain, and maintain, a significant
Competitive advantage. It involves: identifying those people engaged in intelligence or related operations, together with their levels of expertise; locating collections of **Information**, as well as other relevant resources, concerning the organization's **Business environment**; establishing a set of **Key intelligence topics** or ascertaining management intelligence needs.

Intelligence library may be either a separate entity or housed in a **War room**. In contrast to the more usual in-house libraries, it should act as a **Directory**, not a repository. In other words, it may contain such items as directories and **Professional association** membership lists; a collection of major competitors' **Trade literature**; **Competitor**, **Market**, or country files; **Seminar** and **Conference** brochures; lists of **Internet** sources; and a **Thesaurus** or **Taxonomy** together with a **Glossary** of terms.

Intelligent agents are software programs that are capable of assisting their users by performing predefined tasks on their behalf. They may, for example, automatically, and simultaneously, monitor a number of Web sites in order to identify, filter, and collect relevant **Information**; and subsequently recognize patterns or other significant combinations of information; report the results to the user; and offer suggestions to solve a specific problem, draw inferences, or determine appropriate actions.

Intelligent network is programmed to allocate a priority rating to, and the subsequent handling of, **Information** on that net.

Internalization involves the conversion of **Explicit knowledge** to **Tacit knowledge** through a **Learning** process.

International trade involves exports to, and imports from, countries outside national territorial limits.

Internet governance is the development and application by governments, the private sector, and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programmes that shape the evolution and use of the **Internet**.

Internet relay chat (IRC) is a huge, multi-user live chat facility. Private channels may be created for multi-person **Conference** calls.

Intranet is any dedicated, privately owned computer **Network** that is based on the same standards and protocols (TCP/IPS) as the **Internet** and which provides an inexpensive publishing platform for its owner. Applications might include **Electronic mail**, electronic access to company documents (including, for example, company files or internal directories and databases, debriefings or **After action reviews**, examples of best practice), and video communications, with the aim being to facilitate collaboration and information sharing. An intranet usually offers access to the **Internet**, suitably protected to prevent unauthorized access from outside.

Just-in-time knowledge is a concept for delivering **Information** to an individual at the time it is needed to perform a specific task. It may be initiated by means of a program that identifies the contents of the documents currently being produced, or contributed to, by the individual concerned.

Key performance indicators are quantifiable measures that enable an organisation to evaluate its progress in achieving previously articulated strategic and operational goals.

Key intelligence topics (KITs) are those topics identified as being of greatest significance to an organization's senior executives, and which provide purpose and direction for **Competitive intelligence** operations. Key intelligence topics are invariably derived from a series of interviews. They are then grouped into appropriate categories and allocated a priority, usually by the same, or a representative, group of people. The basic categories are:

 strategic decisions and actions (including the development of strategic plans and strategies);

 early-warning topics (for example, competitor initiatives, new technology developments, and government actions);

 descriptions of key players (including competitors, suppliers, regulators, and potential partners).

Knowledge is a blend of experience, values, **Information** in context, and **Insight** that forms a basis on which to build new experiences and information, or to achieve specific goals. It refers to the process of comprehending, comparing, judging, remembering, and reasoning.

Knowledge is **Data** that has been organized (by classification and rational presentation), synthesized (by selection, **Analysis**, interpretation, adaptation, or compression), made useful (by presenting arguments, matching needs and problems, assessing advantages and disadvantages), and acted upon.

Knowledge administrator is someone who collects, stores, maintains, and retrieves the **Knowledge** that others produce. **Knowledge analyst** is a person who defines the needs of an individual or group, clarifies search terms, and advises on the most appropriate sources.

Knowledge archaeology is the process of rediscovering an organization's historical **Knowledge**that may have otherwise become difficult to trace.

Knowledge assets are bodies of **Knowledge** of value to an organization, including previouslyunarticulated expertise and experience held by individuals. They may take the form of documents, databases, individuals, or groups of people, and include records of projects or activities, knowledge maps, links to networks or communities of practice, reports, standard

operating procedures, patent specifications, licenses, copyright material, taxonomies, glossaries of terms, and so on. Knowledge assets are sometimes referred to as Corporate intellectual assets, or Corporate memory.

Knowledge base refers to the complete details of all expertise, experience, **Intellectual capital,** and **Knowledge assets** within an organisation, together with the set of rules governing their
management.

Knowledge-based industries is a term used to describe a broad spectrum of enterprises that are involved with **Advanced technologies** and are concerned with the application of recent developments in many fields, including: advanced materials, biochemistry, biotechnology, **Burotics**, genetics, **Information technology**, instrumentation, **Mechatronics**, medicine, microelectronics, microprocessors, **Nanotechnology**, and optics.

Knowledge-based system is a particular development of **Artificial intelligence** that helps to solve problems or make decisions through the use of a store of relevant **Information** (known as the **Knowledge base**, and derived from one or more human experts), and a set of reasoning techniques. It may also be referred to as an Expert system.

Knowledge creation is the conversion of **Data** into meaningful **Information** that allows the world to be understood in new ways. At the individual level this is known as **Learning**.

Knowledge economy is based on the production, distribution, and use of **Knowledge** as the main driver of growth, wealth creation, and employment across all industries. It does not rely solely on a few advanced-technology industries but is applicable to traditional industries, such as mining and agriculture.

Knowledge engineering involves the planning, design, development, construction, and management of **Knowledge-based systems**. It frequently employs concepts and techniques from other domains, such as **Artificial intelligence.**

Knowledge-intensive industries are those industries calling for high intellectual input; they include **Information technology**, pharmaceuticals, medical and scientific instruments, machine tools, automotive, shipbuilding, finance, and education.

Knowledge management is an integrated, systematic process for identifying, collecting, storing, retrieving, and transforming **Information** and **Knowledge assets** into **Knowledge** that is readily accessible in order to improve the performance of the organisation. The basic tenets of knowledge management are to enhance decision making, foster innovation, build relationships, establish trust, share information, and improve learning. The means for doing so might include apprenticeship schemes and mentoring programmes, briefings and debriefings, bulletin boards, databases, documents, educational and training programmes, knowledge maps, meetings, networks, and visits. Performance improvements may be effected through enhanced learning, problem solving, **Strategic planning**, and decision-making.

Knowledge-management system is a process and procedure for enabling **Knowledge management.** It usually incorporates a **Search engine**, **Data-mining** facilities, and – since **Knowledge** is primarily embodied in people - an expertise directory or location service (known as a **Knowledge map**). Content may include profiles of key people, industry trends, **Market** surveys, descriptions of current and proposed projects or activities, solutions to past problems, and discussion group facilities. The term also implies the creation of a culture and **Information** structure that promotes information sharing and **Innovation**, and places considerable emphasis on learning and personal development.

Knowledge map may be either, or a combination of aspects of both, of the following:

 a graphical display (either hierarchical, or in the form of a **Semantic network**) of the core **Knowledge**, together with the relationships between various aspects, of a subject or discipline;

 a **Directory** (incorporating identity, location, and subject expertise) of people possessing, or having access to, specific knowledge or experience.

In the latter sense, it is a guide to, not a repository of, knowledge or expertise. A critical element is that those people whose details are incorporated must be traceable through keywords describing their area of expertise or subject knowledge. Sometimes referred to as an Expertise database or Expertise location service, it is often compiled with the aid of **Expertise locator software**. When properly compiled and maintained, it may be by far the most valuable of all **Knowledge management** tools. It is often referred to by its more popular term, **Yellow pages**.

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Lateral thinking refers to a means of escaping from habitual mind patterns (or logical sequential thinking) in order to solve problems or explore new ideas. Techniques include deliberate and
provocative challenging of preconceptions, and rejection of yes/no thinking.

Library gateway consists of a collection of databases and **Information** sources (normally
classified by subject) that have usually been assembled, reviewed, and recommended by specialists.

Machine vision involves the use of sensors (for example tv, x-ray, ir, uv, laser scan, ultrasonics)
to receive signals representative of the image of a real scene, coupled with computer systems or
other signal-processing devices to interpret the signals received for image content.

Mailing list is a system (usually automated) that allows people to send email to one address,
whereupon their message is copied and sent to all other subscribers to that mailing list.

Management fad is an innovative concept or technique that is promoted as a new tool for
management progress and that rapidly diffuses among early adopters keen to gain a **Competitive**
advantage. When the concept is seen not to fulfill expectations, its use diminishes equally quickly; its popularity usually extending over a period of about five years.

Management reports compare actual results achieved with budgeted forecast levels and thus
identify deviations from expected performance. Operational managers should present the
Information in such a way as to encourage further **Analysis** and corrective action.

Market analysis deals with measuring and evaluating actual or potential sales of a product or
service.

Market segmentation is the process of dividing the **Market** into smaller groups that share one or more characteristics.

Marketing information system is one designed to collect and exploit **Information** concerning
existing and potential clients.

Metadata is **Information** (in the form of a Metatag) that describes an internet document and

facilitates its retrieval. It is very similar to a **Bibliographic reference**, but - where present - is often more extensive, and may include author, title, affiliation, sponsor, **Abstract**, keywords, language, publisher, date published, contact details, **Classification scheme**, and so on; probably the most useful being keywords.

Micro business is a very small business employing fewer than five people.

Mind maps (a concept devised by Tony Buzan) are a means of representing topics, ideas,
projects, tasks, and similar items in a visual format, similar in some ways to **Semantic networks,**
but with connections usually extending radially from a central **Concept** or theme. The various
elements (including words, images, numbers, and colors) are arranged both informally and
intuitively according to the relative importance of the concepts involved. Mind maps may be used for **After action reviews**, aiding recall, **Brainstorming**, **Briefing** and **Debriefing**, clarifying **Information**, creative thinking, decision making, **Learning**, organising ideas, **Planning**, problem solving, revising, summarizing, and taking notes.

Mindset is a state of mind that affects an individual's attitude to events and ability to make
decisions. It is derived from that person's background, culture, education, upbringing, religious
beliefs, and so on. A person's mindset may also be affected by conventional or received wisdom,
by **Corporate culture**, and by the outcome of similar or related events in the past.

Mission statement defines the business in which a company competes, the company's objectives, and the approach it will take to reach those objectives.

Modeling is a technique used to assist in decision-making by producing probable results based on combinations of assumptions and 'what if' questions.

Modem (modulator-demodulator) is a device for converting **Data** to sound signals, and viceversa, for transmission over telecommunications networks.

Multimedia refers to an interactive system that integrates text, sound, and video. Typical
applications are business presentations, training and education, databases, and electronic
correspondence.
.
Multipoint competition explores the implications of a situation in which diversified companies
compete against each other in several markets.

Nanotechnology is an advanced technology involving the fabrication and use of devices so small that the convenient unit of measurement is the nanometer (one thousand-millionth of a meter); or, is the art of manipulating and exploiting the properties of matter at a molecular level.

Narrative refers to a description of activities, normally presented in the order in which they
occurred. It may be used to describe complicated matters, to explain the outcome of events (such
as decisions made or lessons learned), or to bring about cultural change. Techniques include **After Action Reviews,** best-practice databases, **Briefings, Debriefings**, and storytelling.

Natural indexing language is based on the language used in the **Document** being indexed. Any
terms that appear in the document are candidates for **Indexing**.

Network exists when two or more computers are connected together. Two or more networks
constitute an **Internet**. **Network of practice** is the term that usually applies to a large, geographically dispersed **Community of practice**.
Networking is the informal exchange of **Information** between individuals who have grouped
together for some common purpose. It may be referred to as Social networking.

Neural networks are an attempt to simulate the human brain (by employing **Artificial**
intelligence software) for image analysis and pattern recognition, in locating and matching relevant **Information**, and in assessing risk. Their success depends to a considerable extent on the volume of **Data** in the **Database**. Expert human intervention is essential:
 when setting up - more specifically for determining input variables and structuring the data
in a sensible and usable format (usually the most time-consuming aspects of the technique);
 for interpreting the results and identifying patterns, trends, associations, and similarities;
 in order to make appropriate decisions based on the results.

Newsgroup is the name for a discussion group or chat room on **Usenet**.

Niche market is one in which a firm offers a specific product or service and does it so well that no other firm will be tempted to enter that **Market** (for instance, the market is too small, or it would be too expensive for other companies to catch up). See also: **Market share**.

Notation is a set of symbols, abbreviations, or codes associated with a **Classification scheme**,
annotated **Thesaurus**, or **Taxonomy**, and used to facilitate the arrangement of items so classified. A notation enables the use of an **Explode** facility.

Ontology was originally a branch of metaphysics dealing with the nature of being. It is currently
used to describe a vocabulary of terms and associated definitions or rules covering a specific
domain. Thus an ontology may be regarded as a **Database** together with associated **Information**
about the categories or concepts that exist in that domain, what properties they have, and how they relate to each other.

Operational effectiveness involves conducting similar activities to direct competitors, but being
better in some way, such as faster, of higher quality, or at reduced cost; in other words, conforming to 'best practice'.

Operational planning refers to organizational **Planning** covering the mid-term, that is, from one to two years into the future.

Opportunity analysis is the identification and evaluation of potential business **Opportunities**
coupled with an assessment of the organization's ability to exploit them.

Patent is a government authority to an individual or organisation conferring a right or title to make, import, use, offer for sale, or sell an **Invention** or discovery made in the natural world. It gives the patentee the right to take legal action against unauthorized used of the invention (known as infringement) for a fixed period. A patent cannot be granted for the following:

- an aesthetic creation, such as a literary, dramatic, or artistic work;
- a computer program;
- a discovery not made in the natural world;
- a mathematical method;
- a scheme or method for performing a mental act, playing a game, or doing business;
- a scientific theory;

 the presentation of **Information**.

Patent specification is a **Document** that describes an **Invention.**

Planning is the process of synthesizing a goal or set of intentions into a sequence of steps,
formalizing those steps so as to facilitate their implementation, and articulating the anticipated
consequences of each stage in the process. Planning uses the left brain, involving logic, reasoning, and rational thinking.

Point-to-point protocol (PPP) is a means whereby an individual computer communicates with an **Internet service provider** (ISP).

Portal is a **Web site** that acts as a **Gateway** to the **Internet** by providing a broad and diverse range of services, including directories, **Search engines** or, links, email, reference tools, forums or chat facilities, access to online shopping and banking, games, entertainment, and so on.

Portfolio analysis provides a framework to assess relative **Opportunities** and to enhance the
return on investment (RoI) in a company's portfolio of businesses. It is used to optimize the
allocation of available resources among strong and weak products, brands, or business units.

Precision refers to the number of relevant items retrieved as a proportion (per cent) of the total
number of retrieved items in an **Information** collection.

Predictive analytics is the use of relevant software for the **Analysis** of large data collections
using techniques such as **Artificial intelligence**, **Data mining**, **Decision trees**, game theory,

Neural networks, pattern-matching algorithms, statistics, and **Visualisation**. The objective is to
reveal such factors as the demand for products or services, customer behavior, business
transactions, and market dynamics, in order to suggest decisions for optimum results. Applications may include: brand management, campaign enhancement, cost reduction, customer support, fraud detection, investment, just-in-time inventory control, **Opportunity analysis,** process improvement, product or service differentiation, and **Risk management**.

Pretexting refers to a specific form of **Deception** in which the perpetrator acquires personal
(usually finance-related) information through false pretences - that is, by making false statements, through misrepresentation, or by fraud - and subsequently uses it for some form of gain, or to avoid legal process.

Privatization is the partial or total sale of government business to the private sector.

Product differentiation is that which makes a company's products different from those of its
competitors.

Production network is formed when two or more enterprises cooperate in the production of goods by making the best use of their combined resources and skills, including people, production capability, technology, and **Information**. In this way the enterprises are able to achieve a level and range of production necessary to enter new markets.

Professional associations comprise groups of people concerned with a particular craft, trade,
profession, or industry.

Quarterback technique applies to external events, such as trade shows and conferences, in which a **Competitive intelligence** team is managed to maximum effect through the use of specific, predetermined **Information** and analytical needs and the optimum selection of known or anticipated information sources. The activity calls for rapid reaction to changing circumstances, considerable flexibility in handling resources, and frequent discussion throughout the event. Coordination may be best achieved through the use of an on-site **War room**, together with senior executive input.

Recall refers to the number of relevant items retrieved as a proportion (per cent) of the total
number of relevant items in an **Information** collection.

Re-engineering is the radical redesign of business processes and organizational structure in order to achieve significant improvements in performance, such as productivity, cost reduction, cycle time, and quality. There are usually four major components:

- increasing the emphasis on customer needs;
- fundamental redesign of core processes in order to enable improvements;
- reorganization into cross-functional teams;
- rationalization of the relationships between human and other resources.

Refactoring applies to a form of editing in collaborative writing in which a participant restructures, summarizes, or clarifies a collection of comments, annotations, and other writings into a cohesive whole in order to optimize subsequent group discussion.

Report may be a **Document** containing the findings of an investigation or study, or one offering an interpretation of facts and ideas, and usually incorporating recommendations. It may give an
account of the activities of an organisation over a specific period, or describe a process or
operation. Very often it is produced in response to stated terms of reference, with a known audience in mind. Although producers of reports must examine

essential evidence in an impartial and disinterested manner, they may express personal opinion - provided that it is a rational
interpretation of **Information** set out, or referred to, in the report, and that it is identified as
opinion. A report may also take the form of an oral presentation.

Request for comments (RFC) is the name for the result and the process for creating a standard on the **Internet**. New standards are proposed and published on line as a Request for comment.
Research is any activity undertaken to extend **Knowledge**.

Reverse engineering refers to the process of systematically examining or dismantling a
competitor's product or service in order to reveal details of its design and manufacture; such as
materials employed, techniques used, level of **Technology**, standard of quality, elegant solutions to problems, and so on.

Risk assessment refers to the identification of factors in the **Business environment** which may
have the potential to affect the profitability or existence of an organisation, together with an
evaluation of the costs and benefits of reducing the effects of such risks.

Risk management is the formulation and execution of actions and strategies designed to mitigate the effects of identified risks.

Sample is a subset of a population or a group under study that is representative of the entire
Population.

Schema is a term sometimes used in place of **Taxonomy**.

Search engines are microprocessor-driven software programs capable of successfully retrieving

Information from computer networks or databases in order to match the needs of searchers. They automatically **Index** keywords in context, usually by using **Robots**, then search those indexes for keywords that match the user's request. Generally speaking, they are more suitable than directories for conducting **Research**. Current developments may incorporate **Visualisation** techniques.

Selective dissemination of information (SDI) is a personal **Current awareness service**. It refers to a technique for directing new items of **Information**, from whatever source, to those individuals whose current interests in a particular subject are high, and who may be able to take advantage of such information. SDI is based on a user interest profile which may be compiled using one of the following methods:

 user-created (in which the profile is normally selected by the user from a list of keywords,

descriptors, or indexing terms);

 system-generated (which analyses word frequencies in relevant documents to identify

patterns or areas of interest);

 combined (which consists of a system-generated profile modified by the user);

 neural net (where the system is *trained* using documents of interest to, and selected by, the

user);

 stereotype model (in which areas of interest shared by many users are used to produce

individual profiles);

 rule-based filtering (which implements explicit *if-then* rules to categories content).

Push technology or **Personalization** are more recent terms for the same activity**.**

Semantic networks represent **Knowledge** in the form of concepts (known as nodes) and links (that indicate the relationships between concepts). A **Concept** is an abstract class or set consisting of items or things that share common features or properties.

Server is a computer, or software package, that provides a specific service to client software
running on other computers. A single server machine may have several different server packages, thus providing many different services to clients on the **Network**.

Service network occurs when enterprises combine to enhance their competitive capabilities in
supplying services. The costs associated with **Research and development**, training, **Marketing**,
and initial exploration of export markets are shared by members of the network.

Simple object access protocol (SOAP) is a successor to the TCP/IP protocol.

Small business is generally taken to be a manufacturing enterprise with fewer than 100 employees, or a non-manufacturing (service or retail) enterprise with fewer than 40 employees, in whichowners retain independent ownership and control and make key management decisions.

Smart agents.

Smart card is a plastic card, similar to a credit card, containing one or more integrated circuits for identification, **Data** storage, or special-purpose processing, used to validate personal identification numbers (PINs), authorize purchases, verify account balances, and store personal records. In some types, the memory may be updated every time the card is used.

Social capital represents the active connections between people; including trust, mutual
understanding, shared values, and behaviors that bind together the members of groups, networks,
and communities and make cooperation possible; or, comprises the norms and relations embedded in social structures that enable people to coordinate action to achieve desired goals.

Social engineering is the use of **Deception**, psychological manipulation, or persuasion to obtain
Information by illicit means. The techniques used invariably exploit human failings rather than
resorting to some form of technology.

Social media is a combination of sociology and **Information technology** that allows people to
publish their own content and to establish business or personal relationships. **Networking, Social network, Social network analysis, Wiki**.

Social network is a map of relationships between individuals or organisations. It comprises nodes (usually individuals or organisations) and ties (the connections between them), which may operate at many different levels, ranging from families and close friends to sovereign nations. Social networks often have a critical role to play in the management of organisations, enabling problem solving, decision-making, collaboration, and information sharing, as well as facilitating trade and commerce. They may be used for conducting **Social network analysis.**

Socialization is a means for acquiring **Tacit knowledge**, usually by means of a shared learning
experience.

Soft information is essentially qualitative in nature and consists of ideas, suggestions, opinions,

rumor, gossip, feedback, anecdotes, speculation, and tips. It may be derived from direct
observation or by scanning the media (newspapers, magazines, the Internet, television, and radio)
but, predominantly, through e**licitation**, interviews, or other face-to-face activities. It is highly
regarded by senior executives and is particularly valuable in **Intelligence** operations.

Spam is mass, unsolicited commercial **Electronic mail** on the **Internet**.

Special intelligence briefing is a brief **Report** that identifies a specific issue, summarizes the key supporting analyses, and recommends one or more courses of action.

Specification is a set of technical or operating requirements to be satisfied by a product, a material, or a process.

Spyware is any software application that is generally installed without the knowledge or consent
of the user, to obtain, use, or interfere with personal information or resources, content, or setting,
for malicious or undesirable purposes.

Stakeholder is any individual or group that has a direct interest, or some level of involvement, in
the success of an organisation and would be affected by the outcome of any decisions.

Steganography is a technique for disguising or hiding messages; it usually applies to the
encryption of a message contained within an audio or graphic file.

Stored-value card is a form of **Smart card** that replaces cash in some circumstances (for example, in payphones and computer terminals) some offer reload facilities.

Strategic alliance is a collaborative agreement between two or more enterprises to mutually
commit expertise or resources in order to achieve common goals or objectives, such as reducing
costs, inhibiting competitors, gaining entry to new markets, supplementing critical skills or
expertise, sharing the risks and costs of major projects, or acquiring access to new technology.
Such an alliance may be between companies, or between a company and its customers, its
suppliers, or its competitors

Strategic inflection point is anything which causes a business to make a fundamental change in
the way it operates. Such change may be either subtle (such as the introduction of new
technologies; for instance, the PC and the Internet) or catastrophic (such as a switch in customer
preferences; for example, by the rapid introduction of a much more effective substitute). The most difficult aspects associated with strategic inflection points lie in recognizing and adapting to them. The term was originally coined by Andy Grove.

Strategic intelligence is **Knowledge** about an organization's **Business environment** that has
implications for its long-term viability and success, usually extending several years into the future.
Strategic planning is a top-down approach concerned with the long-term mission and objectives

of an organisation, the resources used in achieving those objectives, and the policies and guidelines that govern the acquisition, use and disposition of those resources. It must also take into account the Opportunities available to the organisation, and an assessment of its ability to exploit those opportunities with a view to gaining a distinct Competitive advantage.

Strategic research is mission-oriented and involves the application of established scientific
Knowledge and methods to broad social or economic objectives, often extending over a
considerable period.

Strategy is the timely adoption of courses of action and the allocation of resources necessary for
carrying out the basic long-term goals and objectives of an enterprise with the emphasis on
achieving something different or unique. Strategy is the calculation and co-ordination of ways and means to achieve ends.
An organization's strategy may be represented visually by a Strategy map; a powerful
communication tool. Strategy formulation involves the right brain, calling for **Creativity**, as well
as the ability to deal with large volumes of information and to visualize a broad perspective.

Structural capital is the hardware, software, **Databases**, organizational structure, **Copyright**,
patents, trademarks, trade secrets, and other items of that nature, that support the productivity of the **Human capital**.

Surrogate is a substitute to be used in place of a **Document**. For filing purposes, this may take the form of an index card bearing a **Bibliographic reference** and the location of the document (for example, a numbered **File**, a

specific office or department, or a named individual), or a **Database** record containing similar details.

Switched multi-megabit data service (SMDS) is a standard for very high-speed **Data** transfer.

SWOT analysis is the evaluation of available **Information** concerning the **Business environment** in order to identify internal strengths and weaknesses, and external **Threats** and **Opportunities**. SWOT analysis is also known as Situational analysis and, when applied to competitors, as **Competitor profiling**.

Synectics is a body of **Knowledge** and a series of techniques designed to induce imaginative
problem-solving or creative activities. Techniques include deliberate efforts at right-brain thinking; and positive, supportive behavior.

Synthesis is the process of combining **Data**, **Information**, and existing **Knowledge** in order to
produce a connected whole, such as a hypothesis, theory, or system; a **Research Report**; or the
development of a **Thesaurus** or **Classification scheme**.

Tacit knowledge is the product of interaction between people, or between people and their
environment. It refers to **Knowledge** that is gained only experientially and, therefore, cannot be
readily articulated or explained to inexperienced parties (for example, drawing, painting, writing,
tying a knot, **Planning**, decision-making). An individual will acquire tacit knowledge only by
gathering **Information**, relating it to existing knowledge, and accumulating experience; it involves judgment, intuition, and common sense. In groups, tacit knowledge exists in the practices and relationships that develop through

working together over time. The major challenges are in its recognition, sharing, and management.

Tactical intelligence is **Knowledge** about an organization's **Business environment** that has
implications for its viability and success in the immediate future. It often concerns such matters as **Marketing**, promotion, pricing and positioning.

Tactical research involves the application of established scientific **Knowledge** and methods to the short-term solution of practical problems.

Target market is a group of people for whom a specific **Marketing mix** is created.

Taxonomy, in its original form, refers to the science of the classification of living and extinct
organisms. In modern parlance, it applies to any system or software designed to organize
Information or **Knowledge** so that it may be more easily stored, maintained, and retrieved. It
usually reflects the language and culture of a specific enterprise or industry and acts as the authority for identifying documents and the content of knowledge maps. A taxonomy is often created by reference to several thesauri, classification schemes, or indexes using a combination of human intellectual effort and specialised software. A taxonomy offers a means of classifying documents and other items of information into hierarchical groups to make them easier to identify, locate, and retrieve. It consists of a structure (or **Thesaurus**), which embodies the terms and their relationships, and a set of applications, which provide the means to identify and locate the information.

Technological change refers to the whole, or any part, of the process from **Invention**, through
Innovation, Technology transfer, Diffusion, to supercession, of machines, tools, products,

processes, and techniques, with the emphasis being on the sociological implications of innovation.

Technological intelligence is a subdivision of **Competitive intelligence** covering those technical activities that are concerned with translating **Research** findings or other scientific **Knowledge** into devices, materials, products, processes, or services.

Technology is the scientific study of the practical or industrial arts, or the organisation of
Knowledge for the achievement of practical purposes.

Technology assessment aims to evaluate the social and environmental costs, the probable
detrimental effects, and the potential benefits of **Technological change**.

Technology forecasting is used to analyse the potential of a **Technology** as compared to the
alternatives. It helps users to determine the appropriate timing and level of investment in current
and developing technologies. **Technology park** is a development, usually established under government auspices, designed to accommodate enterprises engaged in the commercial application of **Advanced technologies**. It may offer ancillary services such as **Research and development** facilities, **Information** resources, office support, and access to **Marketing** expertise.

Teleconferencing refers to any system that employs telecommunication links as an integral aspect of **Conference** operations.

Telematics refers to the fusion of several technologies that are mainly covered by the terms
telecommunication, computer engineering, **Data** processing, data-transmission techniques,
Burotics, and office technology.

Teletext is a **Data** broadcasting service in which pre-programmed sequences of frames of data are broadcast cyclically, and a user, equipped with a standard television receiver and a special decoder, selects the desired frames for viewing.

Teleworking is the process of enabling work to be conducted from any place at any time through
the use of telecommunications links.

Text mining is a software program for extracting essential concepts and clarifying the meaning of a large volume of text.

Thesaurus is a list of terms, or authorized descriptors, used to provide a **Controlled vocabulary**
for **Information** storage and retrieval. It shows hierarchical (broader, narrower), synonymous, and other related terms, and often incorporates scope notes. These latter clarify the meaning of the term or give guidance on its use. A thesaurus may also include a **Notation** as an aid to **Indexing**. A thesaurus is a controlled and dynamic vocabulary of semantically and generically related terms that cover a specific domain of **Knowledge**. It represents a richer and much more powerful tool than does a **Taxonomy** for descriptive purposes.

Threats are unfavorable events or circumstances that may hinder the company in the achievement of its objectives.

Ties refers to the relationships between individuals and groups engaged in **Networking**.

Topic maps are designed to facilitate the organisation and navigation of large **Information**
collections through the use of an open (non-controlled) vocabulary using topics, associations, and occurrences. A topic may represent any **Concept**, including subject, person, place, organisation, and event. Associations represent the relationships between those concepts; and occurrences represent relevant information resources. Although sometimes used when referring to an

Ontology, Taxonomy, or **Thesaurus,** it may, in fact, incorporate any combination of these.

Total quality management (TQM) is a management philosophy embracing all activities through which the needs and expectations of the customer and the community, and the objectives of the organisation, are satisfied in the most efficient and cost-effective way by maximizing the potential of all employees in a continuous drive for improvement.

Trade literature is produced by individual companies, primarily to instruct or inform existing and potential buyers. It includes sales pamphlets, advertising brochures, promotional material, product or parts catalogues, maintenance or instruction manuals, handbooks, user guides, data sheets, and certain in-house journals or newsletters.

Trade secret is **Information** (including a formula, pattern, compilation, program, device, method, technique, or process) that derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and is subject to efforts, that are reasonable under the circumstances, to maintain its secrecy.

Or, more simply, a trade secret is anything which:

 confers a competitive advantage on its owner;

 is subject to reasonable measures to prevent its disclosure;

 is not generally known in the industry or business in which it is used or practiced.

Generally speaking, to legally qualify as a trade secret, the information supporting a new product,

process, or plan must be:

 documented or readily identifiable;

 unpublished;

 disclosed on a need-to-know basis;

 known to be a secret.

Trade show intelligence is the systematic collection and **Analysis** of exploitable **Information**,
from any source and in any format or medium, at any event where products and services, or
information about them, are openly displayed; as well as prevention of its collection by others.

Transmission control protocol/Internet protocol suite (TCP/IPS) is the suite of protocols that
defines the **Internet**. Originally designed for the UNIX operating system, they are now available
for every major kind of computer operating system. TCP ensures proper delivery of **Data**; IP
directs **Information** through the **Network**.

Truncate means to shorten a word by omitting letters from the end and, when used as a search
term, effectively broadens the scope of the search. For example, *Defen**, would retrieve all words
beginning with the chosen letters, such as: *Defence, Defenceless, Defend, Defendable, Defendant, Defender, Defenestration, Defense, Defensible, Defensive*. Also referred to as Stemming.

Unstable market is one in which the **Market** leader has less than 26.1% of the total market and
every other company in the market is within 1.7 times the **Market share** of its nearest rival. An
unstable market is the most attractive for a new entrant having a differentiated product.

Unstructured information refers to the content of any **Document** that has no defined or standard structure such as would allow for its convenient storage and retrieval. Examples include blogs, emails, images, audio and video files, and wikis.

Usenet is an outdated term for a worldwide system of discussion groups, with comments passed among hundreds or thousands of machines. The system is completely decentralized, with numerous discussion areas, each of which is known as a **Newsgroup**. A Usenet is now more commonly referred to as a **Social network**.

Value chain comprises all the activities an organisation needs to undertake in order to create or add value to its products or services. It includes design, production, marketing, delivery, and customer support. Alternatively, a value chain consists of a group of enterprises cooperating to progressively add value to a product or suite of products in response to market opportunities.

Value chain analysis is used to identify potential sources of a company's economic advantage in its industry. The **Analysis** examines the firm's major activities in order to understand the behavior of costs, the associated value added, and the existing and potential sources of differentiation. Major activities are those associated with products, services, and processes, such as **Customer relationship management** and **Marketing**. **Competitive advantage** is gained by performing some or all of the activities at a lower cost or with greater levels of differentiation than competitors.

Value chain management involves actively managing a **Value chain** to achieve efficiencies and expand capacity in order to increase **Market share**. It usually results in any or all of the following: lower costs of doing business, reduced lead times, enhanced products or services, reduced inventory or stock holdings.

Video conferencing provides real time video and voice communication between terminals, usually employing dedicated systems in a **Conference** room setting. Video conferencing may also be accomplished by using a webcam and personal computer, when it is usually known as **Desktop conferencing**.

Virtual organisation is one in which members are geographically separated but who work together through online communications.

Visualisation of information is a technique for making visual representations of the topics or
ideas contained in a body of **Information**, and of their relationships with each other. It usually
takes the form of a map or other graphical depiction that can be readily understood and
manipulated. Visualisation expands the capacity of the human mind to deal with complex matters, enables users to extract **Knowledge** more efficiently, and helps them to find insights not always obvious when information is presented in traditional formats. Other terms used include: Argument mapping, Concept mapping, Content visualization, Graphic visualization, and Visual information analysis.
Voicemail offers a means of electronically sending, receiving, and storing voice-based messages.

Vortal, an abbreviation of vertical portal, is a subject-specific **Directory** or **Database**, as opposed to the more generic **Portal**. Vortals are usually created by academics, researchers, experts, government agencies and other subject specialists; hence the material is usually of a higher quality than that found through general **Search engine** sites.

War room is an area set aside for use as an **Intelligence** or **Knowledge** centre or as a
demonstration room for **Reverse engineering** purposes. Also referred to as an Operations or

Situation room; it may:

- contain a variety of **Intelligence** or **Market**-oriented displays;
- act as an **Internet/Intranet/Database/Knowledge map** centre;
- be equipped as a library or a repository of **Information** collections;
- allow easy and rapid access to recent **Research** results.

Web 2.0 currently lacks a precise definition. It is true to say, however, that although Web 2.0 need not necessarily incorporate new technologies it is generally more interactive than hitherto, tending to encourage increased content creation, collaboration, and learning, and it places considerable emphasis on the user. It is very much oriented towards social networking.

Webinar (abbreviation of Web seminar) is a presentation delivered over the Web using
Videoconferencing.

Webometrics is a neologism used to describe the application of **Bibliometrics** to the **Analysis** of Web sites. It may be used, for example, to measure the relative visibility of a company or
organisation.

Wetware is a term applied to the human aspects of computing. The term is also used to describe
devices and computer peripherals that have been implanted in, or grafted onto, a human being.

Work spaces is a term that covers both working conditions and the dimensions needed to carry out a particular function.

Working environment refers to the physical surroundings required for human activity or industrial processes.

Workshop is a meeting in which the participants are the primary resource, usually used for

Planning, solving problems, or fact-finding.

Yellow pages is the colloquial term for a **Knowledge map**.

Bibliography

(APA standards are followed for listing Bibliography)

Books

-Awad Elias M, Ghaziri Hassan M.(2003) Knowledge Management, Pearson Education.

- A Thothathri raman (2004) Knowledge Management a resource book

Journals

- Anthony Liew, Walden University, 2007, Understanding Data, Information, Knowledge and their Inter-relationships, Journal of Knowledge Management practice, vo. 8, No.2.
- Ashutosh Roy, eGain Communications, 2009, Knowledge Management for "Stand-Out" Customer Service, Best Practices in KM for Customer Service,
- Arntzen Bechina A.A, Buskerud Univerity, Norway, Nkosi Ndlela Hedmark University College, Rena, Norway, 2010
- Brenda C. Ledford, Zane Berge, University of Marryland, Baltimore County ,2008, A Framework for Tacit Knowledge transfer in a virtual team environment, Journal of Knowledge Management practice, Vol.9, No.2.
- F. Tunc Bozbura, in his paper titled Knowledge management practices in Turkish SMEs in 2007 published in Journal of Enterprise Information Management, Vol. 20 Iss: 2, pp.209 – 221.
- Bocaneanu Sara, 2009, Implementing Enterprise 2.0 knowledge Sharing Tools in An Eastern European Consultancy, Journal of Knowledge Management, Vol.10, No 2.
- Choong Kwai Fatt and Edward Wong Sek Khin, 2010, The social technical view of knowledge management in Services Industries, Journal of social sciences 6(2) : 256-264.

- Chong Hai Sin, Gerald Guan Can Goh, Uchenna Cyril Eze, Multimedia University, Melaka, Malaysia,2009, Knowledge Management Enablers toward Successful New Product Development: A Case study in a Semiconductor Manufacturing Firm, Journal of Information and Knowledge Management, Vol 10,No.4.
- Cynthia Chin Tian Lee, Charles Egbu, et.al, Knowledge Management for Small Medium Enterprise : Capturing and Communicating Learning and Experiences.
- S K Chadha and Deepa Kapoor, 2010, A study on Knowledge management Practices of Auto Component Manufacturing Companies in Ludhiana City, The ICFAI Journal of Knowledge management,
- Chadhry Abdus Sattar, 2005, Knowledge sharing practices in Asian institutions: a multi-cultural perspective from Singapore, World Library and Infromation congress: 71th IFLA General Conference and Council.
- Chi-Lung Lee, His-Peng LU et.al, 2010, A process based knowledge management system for schools : A case study in Taiwan, The Turkish Online Journal of Educational Technology Vol.9, Iss 4.
- Choi Y.S, 2000, An Empirical Study of Factors Affecting Successful Implementation of Knowledge Management ,Unpublished academic dissertation.
- Detlor Brian, Umar Ruhi, 2006, The Effect of Knowledge Management Context on Knowledge Management Practices : an empirical Investigation, -Likert scale
- Doctor Gayatri, 2006, Knowledge Sharing in Academic Institutions Technology for Sharing Research Output, CourseWare and Learning Resources, emerging tools for knowledge sharing are Digital Repositories , Digital Libraries. The IUP Journal of KM. The ICFAI University Press.
- Denning Steve, Technology for knowledge management, The website for business and organisational storytelling,

- Davenport T H and Prusak L, 1998, Working Knowledge : How Organisations Manage What they know, Harvard Business School Press, Boston. This research paper is used in Introduction.
- The 9th European Conference on Information Systems.
- Ferreira Joao, Knowledge Management in Automobile Industry.
- Fernandez Jose Teba, 2006, University of Seville, Sebastian Lozan Segura,Jose Luis Salmeron , Jesus Racero Moreno, University Pablo de Olavide at **Seville,** Operational Knowledge management Design in Total Quality Management: Small and Medium Size Companies, Journal of Knowledge management Practice,Vol.7, No1, March 2006.
- Geoff Turner and Clemente Minonne, University of Nicosia, Crypus, University of South Australia, Adel aide, Australia, 2010, Measuring the effects of Knowledge management practices, The Electronic Journal of Knowledge management Vol 8 Issue 1 pp 161-170.
- Halonen Raija and Elisa Laukkanen, Thomas Acton and Kieran Conboy, 2010, Unstructured Knowledge Transfer in ICT Teams, Journal of Information & Knowledge Management, Vol.9, No 1.
- Hafizi Muhamad Ali, Nor Hayati Ahmad, University Utara Malaysia, 2006,Knowledge Management in Malaysian Banks : A new Paradigm, Journal of Knowledge Management practice, vo. 7, No.3.
- Helen Gillingham, Bob Roberts, 2006, Implementing Knowledge Management : A Practical Approach, Journal of Knowledge Management, Vol 7,No.1.
- Jafari Mostafa, Peyman Akhavan, Atieh Bourouni,Roozbeh Hesam Amiri, Iran University of Science and Technology, Tehran, 2009, A Framework for the selection of knowledge Mapping Techniques, Journal of Knowledge Management practice, vo. 10, No.1, Knowledge Map and Knowledge Mapping Techniques. Glossary.
- Keyvan Shahgholian and Hamid Hajihosseini, 2011, Designing a model for evaluation of Knowledge management level in industrial organization of Iran (Auto Industry) , African Journal of Business Management Vol.5(2),pp,332-339.

- Kevin C.Desouza and Yukika Awazu, 2008, Knowledge management at SMEs: five peculiarities, Journal of Knowledge Management, Vol.10, No 1,pp.32-42
- K.Karthikeyan & R.Rengaraj,2010, Impact of Knowledge management practices in Indian Automobile Industry- An Empirical Investigation, International Journal of Information Technology and Knowledge Management July-Dec 2010 Vol 2 No 2 pp 627-631
- Kazuo Hasono, 2006, Application of Knowledge Management to System Development, Fujitsu Sci.Tech.J42,3p.364-368
- Khalid Samara, London South Bank University, 2007, A Framework for Discovering KM Forces : The Fifth Element, Journal of Knowledge Management practice, vo. 8, No.1. SECI model.
- Kuan Yew Wong, 2005, Critical success factors for implementing knowledge management in small and medium enterprises, Industrial Management and Data Systems Vol 105, No 3, pp 261-279.
- Kathleen M. Eisenhardt, 1998, Building Theories from Case study Research, The Academy of Management Review. Questionnaire
- Lewlyn L.R Rodrigues, R.S Gayarhri,et.al, 2006, Empirical Study Based Evaluation of KM Models in the IT Sectors : Implications for Quality Outcomes, Journal of Knowledge Management Practice, Vol.7, No 3
- Maen Al-hawari, 2007, The Importance of the four knowledge Management Styles to Industry:Using the HSD Post Hoc Test, Journal of Knowledge Management Practice,Vol.8, No 3
- Mostafa Jafari, Peyman Akhavan, Ashraf Mortezaei, Iran University of Science and Technology, Tehran, 2009, A Review on Knowledge Management Discipline, Journal of Knowledge Management practice, vo. 10, No.1, Framework and model for KM Implementation.
- Moya K.Mason, Knowledge Management : The Essence of the Competitive Edge , Why KM?
- Manivannan Senthil Velmurugan, Kogilah et.al, 2010, Knowledge Sharing in Virtual Teams in Malaysia : Its Benefits and Barriers,

Journal of Information and Knowledge Management, Vol.9,No 2 pp145-159.

- Mohammed S.Chowdhury, Zahurul Alam, 2009, ICT – Driven Knowledge Economy In Bangladesh: Issues and Constraints, Journal of Knowledge Management practice, vol. 10, No.1, SECI model.
- Mattew Jelavic,Kristie Ogilvie, 2010, Cultural Perspectives on Knowledge Management in Central and Eastern Europe : The SECI Model of Knowledge Conversion and 'Ba', Journal of Information and Knowledge Management, Vol 9,No.2.
- Mughal Farooq, 2010, Beyond the tacit-Explicit Dichotomy: Towards a Conceptual Framework for Mapping Knowledge Creation, Sharing and Networking, Journal of Information and Knowledge Management, Vol 11,No.2, Nonaka's SECI model of Knowledge Creation.
- Dr. Markale Aditi, 2011, A study of the Knowledge Management Systems in Software Dependent Organisations, Vishwakarma Business Review Vol I pg 73-77.
- Naim Ahmed, Anirban Chakrabarty, Parkha Kaul, 2004, Knowledge Management: Areas to Focus and Challenges Ahead, Academy of International Business (AIB), India, 4th International Conference on Globalization and Sectoral Development, Components of Knowledge Management (Overlapping people, process and Information technology)
- Nour-Eldin Mohamed Elshaiekh and Peter Charles woods, Faculty of creative multimedia, 2010, Impact of Knowledge management on small and Medium sized organizations in **Sudan,** Journal of Knowledge management Vol 9 No 1, 2010 pp 41-53.
- Payare Lal and G.S Thakar,2007, Impact of Information Technology (IT) on Knowledge Management (KM) : A Study, Impact of Information Technology (IT) on Knowledge Management (KM).
- Primus Knowledge Solution, 2002, White Paper, Knowledge Management Best Practices.

- Priti Jain, University of Botswana, 2009, Knowledge Management for 21st Century Information Professionals, Journal of Knowledge Management practice, vo. 10, No.2, Creating Knowledge Management awareness within the organization.
- Pradorn Sureephong, Nopasit Chakpitak et.al, knowledge management System for Cluster Development in Small and Medium Enterprises
- Pillania Rajesh K, 2008, Information Technology Strategy for Knowledge Management in Indian Automotive Components SMEs, Knowledge and Process Management Volume 15 No.3 pp 203-210.
- Qianwang Deng, Deji Yu, 2006, An Approach to integrating Knowledge Management into the Product development Process, Journal of Knowledge Management Practice, Vol.7,No 2
- Robertson James, 2004, Intranets and Knowledge Sharing, Using the Intranet to drive cultural change.
- Ruzaif Adli Md Daud, The Evolutionary Design of a Community Information Service Knowledge Network, Giggey (1988) defines community as ‘a group of people who have something common. This can be their age, education, religion, interest, political affiliation, activities, work, possession or a combination of two or more of these.
- M.D.Singh, Ravi Shankar et.al, 2006, Survey of Knowledge Management practices in Indian manufacturing industries.
- Skyrme David, 2004, The 3cs of Knowledge Sharing, Seven incentives in Knowledge Sharing
- Parag Sanghani, 2008, Does Organisation Size Matter for Starting Knowledge Management Program?, The Icfai University, Journal of Knowledge Management Vol VI, No.5, 2008. No matter the size of the organisation Knowledge management practices are very much important.
- Shuib Basri and Rory V.O’Connor, 2011, A study of Knowledge Management Process Practices in Very Small Software Companies, American Journal of Economics and Business Administration 3(4) : 636-644.

- Valaei Naser and Kamarulzaman Ab.Aziz, 2012, Awareness: A study of Knowledge Management Adoption amongst **Iranian** SMEs, Journal of Organisational Knowledge Management.
- S.Wadhwa, J.Madaan, Indian Institute of Technology, Conceptual Framework for Knowledge Management in Reverse Enterprise System, Journal of Knowledge Management practice, vo. 8, No.2.
- Zhao Liang and Xian Chen Zhu, 2008, An Explanation of Individual Knowledge and Behavior Based on Empirical Substrata, The ICFAI University Press.

Web research

- http://hsc.unm.edu/library/kmit

-http://www.knowledgebaoard.com/item/2917., KM best practices : Comparing apples to apples-Knowledge board APQC's (American Productivity Quality control) framework.

-http://www.nsftools.com/misc/WhatIsNotes.htm

-www.angelfire.com/pop2/tai/method.htm

Null Hypothesis :

Ho: Addition of New products or services do not depend on the number and nature of Knowledge Management Practices.

Alternative Hypothesis :

H3: Addition of New products or services depend on the number and nature of Knowledge Management Practices.

Refer Question no 6 F and its analysis along with variables from other questions.

Since the p-value is less than 0.05 the null hypothesis is rejected it is therefore concluded that Addition of New products or services depend on the number and nature of Knowledge Management Practices.

Null Hypothesis :

Ho: Magnitude of Knowledge Management Practices is not a predictor of improvement in production process.

Alternative Hypothesis :

H4: Magnitude of Knowledge Management Practices is a predictor of improvement in production process.

Refer the questions and analysis of question 6-G and its analysis along with variables from other questions.

Since the p-value is less than 0.05 the null hypothesis is rejected it is therefore concluded that Magnitude of Knowledge Management Practices is a predictor of improvement in production process