

## KNOWLEDGE MANAGEMENT AND STRATEGIC COST MANAGEMENT

### Abstract

*In the information age, organizations face a dynamic environment, where they have to be on the lookout for avenues to sustain their competitive advantage. The growth of Internet and globalization, to name a few factors, have resulted in information interchange and availability, bringing down the period for which organizations can hold on to their competitive advantage. One of the ways in which organizations can sustain and improve their competitive advantage, in the current environment, is to reduce cost and thereby maximize value. Organizations have realized that this could be achieved by implementing a knowledge management system and leverage on the benefits of this system to reduce costs. This paper details the theory of knowledge management and strategic cost management and how knowledge management can be used to reduce costs.*

## **1. Introduction**

Business exists to create and render VALUE. Ultimately, that is the one buzz word that encompasses and integrates all streams of study, be it, Finance, Marketing, Human Resource, Information Technology, Strategy, Supply chain and so on. The Value can be given a two by two dimension view as below:

### *Value creation dimension matrix*

	Product	People
Internal	Operational excellence	Employee Capability
External	Product/Service leadership	Customer Intimacy

This study focuses on how organizations can leverage on knowledge management practices to reduce costs and thereby increase value. The application of the theory is illustrated through a couple cases on HP and Infosys. It details how these companies have developed knowledge management systems and used them for strategic cost management.

### **1.1 Knowledge is a basic resource**

Customer intimacy is cultivating relationships to gain customer insights and expanding client base of ‘desirable’ targets. Employee capability is achieved by reducing attrition, sharing of best practices, setting goals for associates, developing and tracking of performance measurements. Product or Service leadership is obtained by delivering the best products and services that push performance boundaries. Also, new offerings are to be created depending on the demand of the clients. Leadership is also by bringing the products to market quicker. Operational excellence is delivering products and services at the best price and with least cost. The pedestal on which each of these elements lies is KNOWLEDGE.

### **1.2 Knowledge management encompasses all change initiatives**

Many innovations have swept the industrial world in the last few decades- total quality management, business process reengineering etc. The forces of technology, globalization and the information age have changed the ways in which organisations create sustainable competitive advantage. Organisations have been forced by these factors to look for new avenues to gain sustainable competitive advantage Organisations have been grappling with change initiatives like TQM, TPM, BPR etc. All these have been aimed at enhanced shareholder value creation. The latest in the list of initiatives has been Knowledge Management, which encompasses all earlier change initiatives.

### **1.3 Knowledge management is the basis for cost management**

Organisations have realized the importance of managing knowledge to gain and sustain competitive advantage and to drive the factors that result in increased value to the organization. One of the primary drivers of competitive advantage is cost reduction and effective implementation of a knowledge management practices can result in cost reduction.

### **1.4 Transit from industrial age to Information age**

Information age has replaced Industrial age. This information age is characterized by enhanced focus on knowledge and intellectual capital. The strongest balance sheet that previously measured physical assets (i.e., land, factories, equipment, cash) is today measuring a new asset, knowledge (i.e., experience, advice, best practices, communication etc.). This shift in focus from ‘hard’ assets to ‘soft’ has been the central theme of many recent management research studies.

“The wealth of nations no longer depends on its ability to acquire and convert raw materials, but on the abilities and intellect of its citizens”(TFPL, 1999,p.2)

“Information and knowledge are the thermo-nuclear competitive weapons of our time. Knowledge is more valuable and more powerful than natural resources, big factories or fat bankrolls.” – Thomas A Stewart, the editor at fortune magazine (Intellectual Capital, 1997)

## **2. Knowledge Management**

### **2.1 Basics**

#### ***2.1.1 Why Knowledge management?***

Some of the reasons why knowledge management has gained currency in recent times are:

*Productivity and Opportunity Loss*

This is due to lack of knowledge where and when it is needed.

*Information overload*

Too much unsorted and non-targeted information results in information overload.

*Knowledge attrition*

Knowledge is lost because of early retirements and increasing mobility of workforce.

*Mergers and Acquisitions*

Organizations are growing in scope and complexity as a result of disparate cultures and technology coming together.

*Reinventing the Wheel*

No standard processes for capturing best practices or lessons learned.

*Growing Virtual Needs*

This is because of dispersed customers and resources.

Because of the above-mentioned reasons, which are the result of the following factors, the time demands efficient knowledge management.

- (i) Speed to change the market place has become so rapid, that the time available for organizations to gain experience and acquire knowledge has diminished.
- (ii) Competition on the market place has forced organizations to reduce costs.
- (iii) Failure of financial models to represent the dynamics of knowledge.
- (iv) Failure of information technology by itself to achieve substantial benefits.
- (v) Unintended consequences of universal information access.

#### ***2.1.2 Importance of Knowledge Management***

The importance of knowledge management is also evident from various surveys and research conducted by management consultants and the expenditure incurred by many corporates on developing knowledge management systems. Some cases in point are

- (i) A survey conducted jointly by Price Water House Coopers and World Economic Forum; found that 95% of CEO's saw KM as an essential ingredient for the success of their company.
- (ii) According to the International Data Corporation, companies worldwide are expected to dramatically increase their knowledge management expenditure from \$2 million in 1999 to \$12 million in 2003.

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- (iii) British Petroleum (BP) managers attributed around \$260 million of added value as a direct result of KM approach. Various refineries of BP, due to KM approach saved between \$1 million to \$10 million in 2000.
- (iv) British Telecom offered significant incentives for the contributors of knowledge. 10% of additional income generated was due to new idea or contribution.
- (vi) Realizing the need to provide an atmosphere for innovation to give birth and emphasizing knowledge culture in the organization, 3M allowed 15% of the week's working time for creative work and new ideas and as a result they had about 60,000 new products.
- (vii) SAP, the software company, in the first quarter of 2001 reported a book value of \$3.16 million compared with its market value of \$4.2 billion at 21st march 2001 (SAP 2001)

### ***2.1.3 Definitions***

Davenport and Prusak (1998) has defined knowledge as a 'fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of owners of knowledge. In organizations, it often becomes embedded not only in documents and repositories, but also in organisational routines, processes, practices and norms.

Peter Senge explained the term as 'capacity for action', an understanding of the facts and procedures required for making things happen.

'Knowledge management is concerned with the exploitation and development of the knowledge assets of an organization with a view to furthering the organization's objectives' (Davenport, 1998)

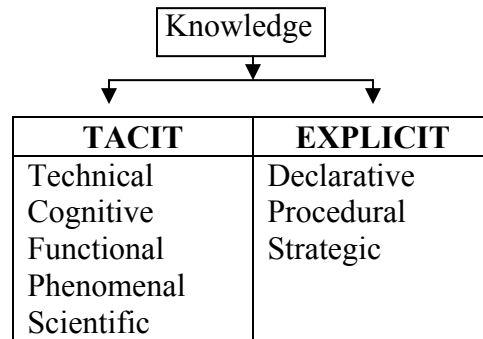
Galagan(1997), have sought to take a process, rather than project based perspective to the definition of knowledge management.

Demerest describes knowledge management in four phases:

- Knowledge construction
- Knowledge dissemination
- Knowledge use and
- Knowledge embodiment.

### 2.1.4 Types of Knowledge

Broadly, knowledge in any organization can be classified under two types, tacit knowledge and explicit knowledge.



#### Tacit knowledge

Tacit knowledge is the knowledge that is embedded in individual experience such as perspective and inferential knowledge. Tacit knowledge includes insights, hunches, intuitions and skills that are highly personal and hard to formalize, making them difficult to communicate to others. It can be ‘learned’ from someone often only by close association with them for a prolonged period of time. Polanyi, who coined this term, termed it as, ‘We know more than we can tell’.

#### *Technical*

Technical dimension of this tacit knowledge is informal and involves acquiring expertise in skills and crafts through years of practice and understanding.

#### *Cognitive*

Cognitive dimension refers to the mental models, beliefs and perceptions conditioned by culture and environment.

#### *Functional*

Functional dimension deals with the generation of decision-making and inference rules.

#### *Phenomenal*

Phenomenal dimension focuses on organizational responses to environmental changes.

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### *Semantic*

Semantic dimension refers to knowledge created by interpreting patterns and effect of these patterns on organizations.

### *Explicit knowledge*

Nonaka refers to explicit knowledge as 'formal and scientific' and offers technical manuals, scientific formula as examples. Explicit knowledge is that which is articulated as formal language and can be expressed in scientific formulae, codified procedures or a variety of other forms. It includes data, facts, records, documents, texts, etc., held in different types of media.

### *Declarative*

Declarative knowledge refers to the descriptions of fact, method, and procedure, with authority.

### *Procedural*

Any list of activities for completing a particular task would qualify to be termed as procedural knowledge. In other words, procedural knowledge is 'knowing about how to do a particular task or activity'.

### *Strategic*

Strategic knowledge is used to refer to the type of knowledge when an activity needs to be performed and why it should be performed. This type of knowledge is used by organizations to achieve competitive advantage.

Tom Davenport and Larry Prusak suggest further types of knowledge within the main categories of tacit and explicit knowledge, each corresponding to the source of that knowledge.

### *Acquired knowledge*

Knowledge, which comes from outside the organization, may be due to purchase from another source.

### *Dedicated resources*

Knowledge created when an organization establishes a unit or group for a specific purpose.

### *Fusion*

Knowledge created by bringing together people with different perspectives to work on the same project.

*Adaptation*

Knowledge resulting from response to changes in market place.

*Networking*

Knowledge created through networking, in which people share information with one another.

Before we go to the process of Knowledge Management, let us look at the history- Emergence of Knowledge Management.

**2.1.5 Emergence of Knowledge management**

Dividing into three ages we can have a look at the history:

- Stage I : Prior to 1995
- Stage II : 1995
- Stage III : Post 1995

Stage I

In the first age, the focus was on the appropriate structuring and flow of information to decision makers. The technology centric age was focused on computerization of major business applications. The technology-enabled revolution was dominated by the perceived efficiencies of process re-engineering. This aptly put by Hammer and Champy, the archpriests of re-engineering, ‘How people and companies did things yesterday doesn’t matter to the business re-engineer’(1993). First generation KM describes ‘what is’ and by capturing collective intelligence, promotes best practices.

Stage II

Knowledge management was popularized in 1995 by Nonaka and Takeuchi’s SECI model. The focus was on the movement of knowledge between tacit and explicit states in order to create knowledge through four processes of Socialization, Externalization, Combination, and Internalization.

	To		
From		Tacit	Explicit
	Tacit	Socialization	Externalization
	Explicit	Internalization	Combination

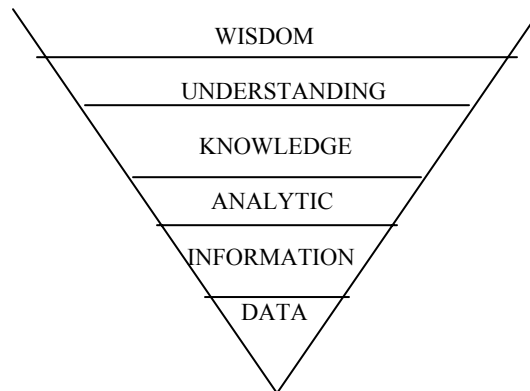
Second generation KM departs from existing knowledge bases in order to suggest ‘what could be’ through process of learning and innovation.

Stage III

In the third generation, we grow beyond managing knowledge as a thing, to managing knowledge as a flow. The focus is more on context and narrative, than on content. Third generation KM is an exploration of ‘what should be’ and more about knowing that meaning, and ‘know-why’ which forms the basis for thinking.

**2.1.6 Knowledge transmission to meaning creation**

‘The possession of facts is knowledge, the use of them is wisdom’ – Thomas Jefferson. The knowledge hierarchy goes through various levels, from data to wisdom. These terms are generally used interchangeably although there exists a clear distinction between each of these stages.



Data

Basic element of information in an organization is in the form of data. Data comprises nothing more than ‘factoids’.

Information

Data becomes information when the context is made explicit.

Analytic

Applications with analytical processing capabilities provide users with the ability to analyse information and determine relationship patterns.

Knowledge

Knowledge is a product of human experience and reflection. It is created as a result of logical inferences.

Understanding

It involves active engagement in learning and creating meaning. Understanding integrates reason and values, intellect and intuition.

Wisdom

Wisdom is the utilization of accumulated knowledge.

### ***2.1.7 Process of Knowledge Management***

The Knowledge Management process involves the following steps.

- Identify
- Capture
- Share
- Retrieve
- Evaluate

## **2.2 Benefits and Critical Success Factors**

### ***2.2.1 Benefits of Knowledge transfer and knowledge sharing***

- They stop you reinventing the wheel as a result save time and reduce effort.
- They speed up decision-making processes.
- They provide an effective way of inducting new staff.
- They encourage the use of knowledge and promote collaboration.
- They capture knowledge for organizational use.
- They encourage the transfer of best practice.
- They promote innovation in processes and products.
- They affect the bottom line-financial or otherwise.

### ***2.2.2 Critical Success Factors for KM***

- Leadership commitment
- Business strategy and individual performance measures
- Dedicated resources
- Culture and Change management
- Technology infrastructure
- Identification of knowledge

## **2.3 Barriers and Misconceptions**

### ***2.3.1 Barriers to Knowledge management***

#### Organization Culture

Culture is key for knowledge performance of an organization. Culture is notoriously difficult to change.

#### Leadership

The initiative for KM should flow from top management right down the hierarchy. But when it comes to management style, the best approach is ‘middle-up-down’ approach where the middle managers act as the links between the ideals of top management and the realities of the frontline.

Learning

In a knowledge-based economy, ‘the new coin of the realm is learning’ (quoted from Von Krogh, et al, 2000, p.3). But hardly real learning takes place in the organizations because of legacy systems and resistance to change mindsets.

Lack of Business Purpose

Too many companies treat KM as an end in itself, argues Nancy M. Dixon, a professor at George Washington University. “The number one reason KM initiatives may not function in an organization is that the ‘evangelists’ fail to connect with real business issues”, she says.

Poor Planning And Inadequate Resources

Many companies focus their attention on the KM pilot project and forget about rollout, says Richard McDermott, President, McDermott Consulting in Boulder, Colorado.

Lack of customization

KM is not one-size-fits-all program. Knowledge transfer systems are less useful and less effective when they are designed for first ‘any one’ in the organization, says Dixon.

Organization structure

In some organizations, the very structure may be too rigid for seepage of knowledge as a flow.

**2.3.2 Misconceptions**

Knowledge management being at early stages of conception and implementation has given way to varied misconceptions. A knowledge management system cannot be bought off the shelf, like a word processing package. It is something intimately linked to a particular organization to its employees, management, culture and environment. It is just an enabler for it.

Two of the common misconceptions have been explained below: -

(i) Organizations, label information technology solutions like groupware products, implemented in their organisations to be knowledge management systems. Information technology solutions address only the knowledge sharing and retrieving elements of the knowledge management process and cannot be construed to the actual implementation of the knowledge management system in the organisation.

(ii) Organizations develop data marts and data warehouse and declare them as knowledge management systems. Data warehouse is structured data for querying and reporting rather than analysis. A KM system does not stop with capturing knowledge objects from various individuals in the organization to codify and store them in central repositories but also consist of inferences made on the information gathered from varied perspectives for the benefit of whole organisation.

Past is a history. Future is a mystery. But still it cannot be denied that the decisions are taken with the known past for an unknown future, where change is the changeless law of the world. But, the constraints are faced by all the businesses. Smart are those companies that render value to increase the corporate performance in the competitive environment! Improved corporate performance depends on competitive advantage enjoyed or created by the organizations, either by Product differentiation strategy or (low) Cost leadership strategy. Cost leadership is achieved through strategic cost management and how knowledge management accelerates the efficiency and effectiveness of the same is the intended area of research and study.

### **2.4 Knowledge Management and Creativity**

Creativity is the ability to bring in new appropriate and relevant ideas through imagination and intuition. Innovation is the process of operationalizing the new idea.

There are various processes associated with the process of creating new ideas, like, brainstorming, lateral thinking etc. The ideas created by these methodologies can be harnessed through proper and appropriate knowledge management systems.

Nonaka suggested that successful companies are those that consistently create new knowledge as solutions to unfamiliar problems, disseminate widely throughout the organization and quickly embody it in new technologies and products, which implies that a proper knowledge base is a source of creation of new knowledge in the organization. The creation of new knowledge is through creative ways of combining existing knowledge units available in the organization.

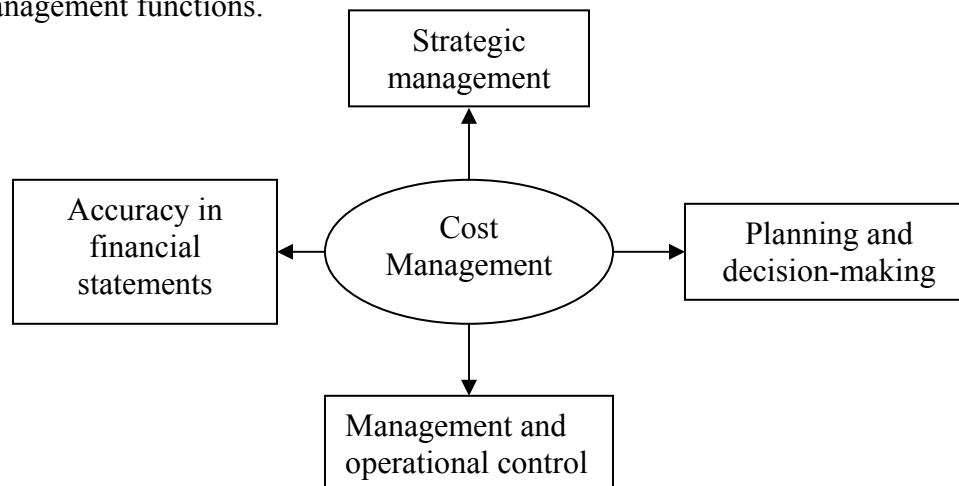
Donald Schon, an American writer has argued that creativity comes out of displacement of ideas, using concepts in one field in another field. This statement highlights the importance of a knowledge base since the concepts of one field to be used in another field can be effective if the ideas and concepts are stored in a knowledge base. Organizational innovation requires exploring new ways of combining existing ideas in a new way.

### **3. Strategic Cost management**

Cost management is important to organizations because it is a philosophy, an attitude and a set of techniques to create more value at a lower cost. Cost management looks into the long-term competitive success of the firm. The critical success factors for cost management not only encompass financial factors, costs and revenues but also non financial factors like new product development, product quality, customer satisfaction and the like. Therefore, the role of cost management is to identify, measure, collect, analyse and report information on these critical success factors reliably and in timely manner.

Cost management information is needed for all four management functions.

- Strategic management by which the companies choose their line of products, manufacturing methods, marketing techniques, and other long term issues. Also it supports management decisions by identifying and measuring the impacts of alternative decisions that potentially affect operations in all parts of the organisation.
- Planning and decision-making in operational and recurring issues like managing cash flow, budgeting, purchase of raw materials, production scheduling and pricing.
- Management and operational control to increase customer value by identifying opportunities to eliminate non-value adding practices and processes but reward and support effective managers
- Preparation of financial statements for accurate purposes and also to comply with reporting requirements. These financial statements are mainly used by other three management functions.



As it is said by Ronald W Hilton, Michael W Maher, Frank H Selto in their book, Cost management – Strategies for business decisions, “Cost management rejects the notion that “costs happen” and embraces the perspective that all costs can and should be managed to meet organizational goals”. It is an accountants’ philosophy that ‘costs happen’ and it has to be measured accurately. But, it is a fact that cost results from management’s decisions to meet global business conditions. An overarching theme is ‘best cost management practices’ which is the result of external competition among

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companies and internal threats from alternative sources of information. Cost management has therefore assumed the role of a management facilitator than a mere steward.

Considering the ephemeral differentiation strategy, the companies should focus on cost leadership for long-term competitiveness. Cost reduction can be achieved either by reducing capacity or drive savings by improving efficiency. Only the latter can make permanent changes in cost structure. Companies that reduce capacity will soon find itself washed out from the arena of competition, for 'volume' is the name of the game in the years to come.

Cost management system should provide information that identifies various sources of competitive advantage. Competitive advantage is achieved when the organisation is:

- More efficient than its competitors
- A first-mover in making new technology that offers cost or productivity advantage.
- Rendering more valuable services.
- Possessing superior knowledge and capability of employees to come up with new products and services
- Harnessing organizational resources to improve financial and non-financial outcomes.

All these need to be a continual process which takes place iteratively rather than one time occurrence.

#### **4. Knowledge management and Strategic Cost Management**

Organisations, in the present day scenario, have realized the difficulty in sustaining competitive advantage over an extended period of time. An organisation gains competitive advantage by creating more value for its customers than its competitors, because customers demand enhanced value at reduced cost. Organizations have now felt the need to look for avenues by which they could reduce costs to survive and succeed and have realized that cost management as one of ways by which they could enhance value for its customers. Strategic Cost Management is an integrated approach to value management, which results in improvement of price performance ratio.

Creativity is another key requirement for value management. Creativity is not to be looked as any isolated function but as an integral part of organizational functions. Knowledge management is one of the important catalyst for creativity and this is succinctly emphasized by Prusak in this quote - "A firm's competitive advantage depends upon what it knows, how it uses what it knows and how fast it can create something new" Knowledge management provides context for creativity, for without a context creativity has no meaning. It is the relevance and feasibility of implementation of an idea that makes it more meaningful. Creativity can help in discovering new product or new process and could also be instrumental in streamlining existing processes.

Cost reduction could be brought about by streamlining existing processes or by introducing new processes, which are more efficient than the existing processes. Creativity plays an important role in bringing in new thinking to streamline existing processes or in creating new processes. Creativity requires exploring new ideas, combining existing ideas in new ways and experimenting with them to create ideas, which are operational. The base for creativity is the knowledge base of existing practices. Together, knowledge management and creativity lead to improvements in the existing processes and creation of new processes.

Process streamlining involves simplification of existing processes and elimination of non-value adding steps in the process. Non-value time could be due to rework and errors in process execution and elimination of such non-value time results in benefits like reduced cycle time, increased quality thus leading to increased economic value. Organizations therefore have more time for creative thinking which plays an important role in generating ideas, to reduce the non-value adding time and thereby enhance value.

Cost Management can be achieved by

- Ensuring accurate, appropriate decisions taken on time
- Improving process efficiency
- Improving service capability

In all the above focused areas, knowledge management plays a crucial role in reducing costs and hence we could reasonably conclude that proper knowledge management can lead to cost reduction.

Since, in the present era, cost is one of the main drivers for organizations to achieve competitive advantage, cost management is looked at more from a strategic dimension rather than a functional dimension.

### ***4.1 Knowledge management and decision making***

Making decision is the most important job of any executive. It is also the toughest and the riskiest. Bad decisions can damage a business and a career. In many cases bad decisions can be traced back to the way decisions are made:

- The alternatives are not clearly defined
- Right information is not collected
- Costs and benefits were not weighed accurately.

Knowledge management facilitates quick decision making, be it corporate or operational issues. It is not enough if the process is fast enough but it should assure a right decision, because the cost of wrong decisions is going to be enormous. With inadequate and distorted systems, faulty signals received may lead to decisions ignoring the costs of unique versus common parts, new versus existing vendors, and simple versus complex production processes.

Knowledge management process involves the storage of knowledge units centrally in the organisation. Decision makers require information to be looked at from various perspectives before arriving at the decision. This decision making process is facilitated by inputs from various quarters. The method of storage and currency of data and information have an impact on the correctness of the information and consequently the quality of decision taken. If the information is from varied sources, the possibility of distortion in the information is much higher than centrally located information. Hidden costs associated with this can be eliminated with the help of Knowledge management. Moreover, these information units do not contain the inferences of the previous decisions and the impact and the effect of these decisions.

In the case of the knowledge management repository, not only are the knowledge units centrally stored, but also the inferences and the impact of the previously taken decisions are also available for the decision makers. The decision makers could analyse these inputs and prior to decision making. The availability of these knowledge units reduces the hidden costs of assimilating information required for decision-making and proper analysis of previous decisions could result in better quality decisions, which also has a bearing on costs. Research indicates that it costs 5000 pounds per employee per annum for gathering information.

### ***4.2 Knowledge management and process efficiency***

Process efficiency results in cost effectiveness. Improvements in processes provide organizations with an advantage of reduced process time and reduced costs. These

improvements could be either in terms of reduction in the process steps involved in completion of an activity or by redesigning the existing processes, both of which could be achieved by having an effective knowledge management system, thereby improving the efficiency of the processes reduce costs.

(e-g) *Generation of sales proposals*

Organizations generate sales proposals to address the requirements of the prospective customer, which matures into an order. In the absence of a standard system, the organisation could have many processes and procedures for generating sales proposals. Moreover, these proposals may not be standardized across the organization. The organization, on the other hand could define standard templates and models for various types of proposals and store them in the knowledge base. All the proposals generated by the organisation could be centrally stored in the knowledge base. The sales personnel, while generating a proposal could browse through the knowledge base for similar proposals and templates and could use them as a base for creating the new proposal. This reduces the time required in generating the proposals and also ensuring uniformity in the proposal generated across the organisation.

If this knowledge base is web enabled, the sales personnel could access the knowledge base from the customer's location and address the queries of the customer across the table, thereby reducing the number of visits required to clinch the order. This results in enormous savings in cost.

IBM consultants have reportedly cut proposal-writing time from an average of 200 hours to 30 hours because they could share information

### ***4.3 Knowledge base and improved service capability***

In a service-based organisation, the problems faced by the various customers are varied and require a variety of initiatives to set them right. Normally, the symptoms, problems and solutions are recorded on service slips of the service engineers. A few organisations capture some of this information for analysis and further action.

In a knowledge management system, all parameters relating to the service calls are centrally recorded, and codified. The impact of these problems are also recorded and stored.

All service engineers could access this central knowledge repository, on receiving a service call to check if there has been a call in the past similar to the one reported. This would give them all the details about the call, enabling the service engineer to try out all the steps taken earlier on a similar call, before taking any new initiatives to solve the problem. In most cases, trying out all the steps taken earlier would solve the problem thereby reducing the time spent by the service engineer at the customer installation. This in turn would reduce the service cost per call for each service engineer. An efficient knowledge base could thus result in improved service capability and reduced cost of service by reducing the diagnosis rectification time.

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Eureka, and 'expert' database compiled by Xerox for its copier repairers has reduced average repair time by 50%.

Technical support representatives at Dell Computer Corp.'s Bray, UK call center can solve more problems with a single call. Thanks to a knowledge base that advises the representative on what questions to ask and to fix problems.

## **5. Case Studies**

### ***5.1 Knowledge management and cost reduction at Hewlett Packard***

This case on Hewlett Packard Inc. (HP), details how their knowledge management solution resulted in strategic cost management.

#### **Background**

Hewlett Packard Inc. is one of the top technology innovators. HP outlined new strategies to manage the pace and complexity of life in business. The company competes in many markets, including computers and peripheral equipment, test and measurement devices, electronic components, and medical devices. It is a large, successful company with over \$31 billion in 1995 revenues. Its fast annual revenue growth approximately 30% from such a large base has astounded observers. After eight months and millions of hours of integration planning by the two teams, it was a monumental occasion for the hardware giants HP and Compaq on May 7<sup>th</sup> 2002, when they were ready to do business as new HP.

#### **Post merger need**

HP was a largely decentralized organization and their culture was somewhat inefficient. There were huge costs associated with flow of information, conducting transactions, and overall administration. These problems compounded after the two different silos in which they operated merged into a common platform. The objective of the merged entity was to cut \$3 billion of its budgets. Hence there was a need to transform the new HP into a leaner meaner one, thereby saving lots of money in the process.

#### **Knowledge Management as a solution**

HP worked on various alternatives for achieving their objective of cost savings and finally decided on Knowledge management as a solution. This solution was envisaged not only for saving on costs, but also help in bringing together nearly 110,000 employees of HP and 57000 of Compaq. Another reason for choosing knowledge management as a solution was the size of the company and it's presence, especially after its merger with Compaq. The knowledge management solution could handle the access demand of innumerable users at once and reduce the cost of administering benefits and dealing with human resources processes for such a large, widely scattered workforce.

#### **Birth of the portal**

HP, initially had scores of intranet sites addressing the needs of employees of various functions, spread across the globe. The primary task of the knowledge management solution was to integrate these sites and centralize the information into a central knowledge base, which was universally accessible. This need led to creation of a

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centralized knowledge portal for storing and dissemination of information and knowledge.

HP evaluated various technology solutions and decided on the technology solution provided by Epicentric, since it was capable of high performance, when accessed by hundreds of thousands of users. The company took about six months building and testing the portal before it went live with a muted fanfare on Oct 23, 2000. HP has a dedicated portal staff of 50 people dealing with issues of portal governance, application integration, training, marketing of the portal, and even ensuring that the portal goals mesh with the larger goals of individual business units and with the company as a whole.

The genesis of @HP portal came with a vision to provide solutions that address real problems to create better value, by harnessing tangible benefits from investing in Knowledge management. They could access relevant information wherever and whenever they needed. With increased simplicity across a range of technologies, they had greater control over technology coupled with greater choice and flexibility. They were leaders in delivering dependable products, solutions and services.

The portal was a critical vehicle for change. It was a means of streamlining the processes and systems while at the same time enabling and empowering employees to meet challenges of enterprises in transformation.

The portal ensured that all information regarding company's news and policies were present in order to create a common mindset. HP attempted to capture and distribute the knowledge resident in their business units and departments. It also developed approaches to facilitate access to both internal and external knowledge. It was possible because the employees of HP were already comfortable using their department's intranet and the browser to locate information and conduct transactions. The idea behind it was save money by allowing the employees to serve themselves. Simplicity was the hallmark of their experience as HP sets out to make that experience more rewarding.

### **Web-based workshops**

The portal had web-based workshops, which facilitated knowledge sharing, and the establishment of common language and management frameworks for knowledge management. Many knowledge bases were introduced, for example, a discussion data base called Trainer's trading post was created which included reviews and evaluations of training resources. The portal also contained a collection of training documents in Training library.

### **Expert Profiles**

The portal also has database on expert profiles, or guides to the backgrounds and expertise of individuals who are knowledgeable on particular topics. By browsing or searching the same, it will be easy to find, for example, someone in HP who speaks

German, knows ISDN technology, and has a Masters or Ph.D. in a technical field and quickly link to the individual's home page.

### **Competitor Information**

The portal also contains another knowledge base of competitor information, international marketing and intelligence. It contains product information, competitive intelligence, white papers, and ready-to-deliver marketing presentations. It also provides a web-based interface to primary and secondary research information. The goal was to facilitate the process of structuring and disseminating knowledge through the use of information technology.

### **Dealer Information**

HP workers put frequently asked questions, frequently encountered problems on a dialup database, and the number of dealer support calls began to decline. One key reason for the system's effectiveness is the developers' close attention to the actual problems faced by dealers not their own ideas about what knowledge is important. Another important factor is the constant effort by developers to add value to the knowledge

### **Benefits**

The implementation of knowledge management system resulted in substantial reduction in costs. There are various aspects of knowledge management that contributed to the savings in cost; some of them are discussed below.

#### *Cost of information retrieval*

The portal increased workforce effectiveness, allowing employees' access to real-time information in a secure, web-based format that enhanced the overall company-wide communication link. The cost of retrieving information and cost of summation was reduced to a great extent. It also increased the workforce competitiveness while providing a compelling benefit to employees by facilitating telecommuting and dynamic work scheduling.

#### *Staff Cost*

The employees could administer their own benefits electronically. The 'Help us help yourself' section of the portal facilitated reduction of costs associated with staff. Salary cost is a major portion of staff cost. Not only the salary costs, but also the other employee costs incurred by the company were reduced.

#### *Cost of manual data maintenance*

The process of manual data entry was eliminated. Huge paper based manuals did not find a place after the creation of the portal. The costs of errors and corrections associated with

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manual data entry were also avoided. The cost of creating and maintaining the paper-based manuals were also eliminated.

### Cost of maintaining separate URLs

The creation of a central knowledge base resulted in elimination of 4700 separate URLs on the company intranet. The cost involved in maintaining the site and updating data was reduced. But for the portal, it would have necessitated the company to update multiple sites failing which the company might incur huge costs because of erroneous information or information that is not current.

### Cost of call centers

There was a large reduction in calls to internal call centers and the new paperless processes. Hewlett Packard reduced its cost per call by 50 percent. In fact, support calls related to human resources issues have been reduced so dramatically that HP has actually been able to close some of its call centers. This was the primary reason for HP to achieve a \$50 million return on its initial investment of \$20 million within the first six months.

## ***5.2 Knowledge Management and Cost reduction at Infosys Technologies Limited***

### **Background**

Infosys started as a small organization in 1981 and currently has 10000 employees worldwide. The company is in the business of providing consulting and IT services. The company is a pioneer in more ways than one

- the adoption of offshore model of software development
- the first Indian company to be listed in NASDAQ
- the company has topped the charts on various parameters including shareholders wealth creation and corporate governance

The company is known for and has been cited extensively in Indian management literature and corporate circles for corporate governance and performance and the following facts corroborate this.

- Ranked No. 1 in the "Best Employers in India 2002" survey conducted by Hewitt Associates for the second consecutive year.
- First rank in the Business World's survey of "India's Most Respected Company."
- Touched \$ half a billion in annual revenue.

### **Knowledge Management (KM) Initiative**

Behind the success of the company is the Infosys' KM strategy. Infosys began its efforts at managing its knowledge base with a clear mission – 'to ensure that all organizational learning is leveraged in delivering business advantage to the customer'. In order to leverage the learning in value delivery, it is important that the organizational knowledge is consolidated. Infosys has envisaged that it was in a business where the company had to maintain cost leadership even while trying to maximize value.

The consolidation process would minimize the effort and the cost dissipated in redoing learning that has already happened elsewhere. Thus the organization will find itself more speedy and efficient as it ascends the value chain by implementing the 'learn once, use anywhere' paradigm. This paper discusses the various KM systems and processes prevailing in the organization to meet the twin objective: Cost leadership and Value maximization

### **KM Systems and Processes**

Precision, measurement, de-skilling, de-risking processes, systems and routines- a magnificent obsession with the above mentioned has helped it become one of the most formidable programming armies. Infosys expected exponential growth and hence it knew it had to build systems, which could scale up. It also needed to ensure that the centralized system were easily accessible from anywhere.

Today, despite having 16 development centers across the country, one in Canada and six proximity development centers in other parts of the world, the Infosys people can boast of amazing, real time access to data. Every system from project management to ticket

processing is online and integrated. Change one piece of data somewhere, and everything gets updated in the system. There is no need to log into different data sheets and feed the same numbers. And that makes for unparalleled access to decision-making data. A person can look up the status of different projects, the manpower deployed in each of them, and dozens of other things by tapping a few keys. And Infosys is talking about all systems being accessible to all mobile users from anywhere in the world on any device.

Infosys believes KM lets it cut costs and scale up quickly. The KM system developed and deployed across Infosys has many sub-systems in place, which facilitates cost reduction and in turn maximizes value generation. The details of the subsystems are enumerated below.

### **Sub Systems**

#### *Projection System*

Accurate projections are an indispensable part of cost leadership strategy. A KM system has been elaborately designed and geared to show how the company is affected even if a very small variable in either revenue or cost is altered. For example, if the company allows executives above a certain level to travel business class by air, the model can immediately predict how the company's total costs will go up every year for the next five years. The system takes into account the projected data for the number of executives above those ranks in each of the five years, calculates the number of trips that each executive will take on an average, projects how airline ticket costs will move in next five years and then combines all three to calculate total cost Infosys will incur each year. Finally, it will correlate this calculation with sales growth and realization assumptions to figure out whether the margins will be affected or not. This forces people to think about long-term impact of policies. The same system helps the company plan salary increases based on its growth expectations.

#### *Yield management system*

This is a decision support system designed to help the company decide whether it should pick up a particular contract or not. Wrong decisions leading to a fall in overall margins can be prevented because of the yield management system. This system allows the company to price different capacities at different prices based on certain parameters. Any project will run for several months and one mistake in the calculation can have major repercussions in the bottom line.

### Meeting targets

Costs are captured in the system in as much detail as possible, and the systems are structured in a way that the volume effect could be calculated for each line item. There is flexibility to play around with different costs. So, the systems don't just help in decision-making –they also help the company in meeting its targets. For example, in the year 2002, the companies cut the insurance liabilities for their employees in the US instead of taking a hard route of firing people like other companies.

### Project tracking system

Project milestones have to be reviewed regularly. The software quality standards describe in detail how a review is to be conducted. It has to be done by peers and leaders who have to be notified in advance. The system has checks and balances built in such a way that the system prevents one from moving on to next phase, if the review is not done and documented. There cannot be a requisition for more people and billing procedure cannot be initiated.

### Automatic warning systems

The project tracking system has automatic warning systems. The idea is that if risks are identified, systems can be programmed to alert management. The profitability margins are tracked by region, by geography, by horizontals, by verticals and even by projects. If any of them drops, system raises warnings. This helps in corrective action being taken at the right time and thereby brings down the costs due to detection of errors in the advanced stages of the project.

### PS-web

This is a system that allocates manpower. It will work only if a proposal in the Customer Relationship Management system becomes a project, and a project code is allocated in SAP.

### Payana

Payana, the employees' self-service travel system will process requests only if the IOS system that processes visas has already been alerted. Visas can be processed only if a person already has been allocated to a project. There are also gates at each level in most systems. If a previous step has not been completed, the system gets locked.

### PRISM

For the top management, data across all projects can be aggregated into an information system called PRISM (Project Review by Infosys Management) and exceptions get highlighted in different colours. One click on the exception and it will go into the next level of detail. So any exception in any system will be visible at the highest level. The

system also allows people to click on an item in a high-level report and drill down to the detail of a single transaction.

### **Capturing data**

Systems are only as good as the data fed into them. Data capture at every single step helps the company figure out when any pattern is changing. For example, the CRM system, developed, in-house, captures all customer contact information- cold calls, presentations or proposals, negotiation, closing et al. So every single transaction with the customer whether it was the sales guy or the domain expert, who called in, duly gets noted. Every prospect is entered into the system with a probability number of actually getting converted into a customer.

This system increases predictability of Infosys' revenues. If a pattern of business change with customers is noted, then response can be made quickly. Their total IT spend is about \$100 billion and our turnover compared to that is almost nothing.

### **Knowledge management and cost reduction**

The above-mentioned sub-systems are contained in an overall centralized knowledge management system. This system is accessible to all at Infosys from any part of the world, thus ensuring transparency leading to the development of a sharing culture across the organization. The system also has several control points, which are accessible at various levels in the organization. This ensures that all functions and operations are regularly monitored and early warning signals are tracked and captured on occurrence. The correction and improvement mechanisms are put in place almost instantly, resulting in enormous cost reduction on various fronts and achieving cost leadership even while trying to maximize value.

### **Benefits**

The above systems have resulted in various costs and overall benefits. The company has grown at CAGR of 82% since 1997. The reviewing and processing mechanism ensures tight control over the process and the costs associated with them. The top management spends almost 25% of its time reviewing processes. The cost benefits from these systems are evident from the facts that costs went down by 2.4% whereas the revenues grew by 37%. The overall benefits from this system are gauged by two key ratios ROIC- 83.1%, ROCE – 54.4%

**5.3 Key learning from Case Studies**

- Knowledge management is an organization wide subject and not functional.
- Organisations can gain strategic benefits by effectively managing knowledge.
- Having all knowledge inputs centrally located facilitates easy access by all in the organization. This results in reduced transaction costs for information access.
- Organisations could have various subsystems addressing various functional requirements. But these subsystems need to be integrated and be brought under the overall knowledge management system.
- Knowledge management facilitates and brings about a cultural bind in the organization.
- Knowledge management brings about operational efficiency through reduction in non-value adding time.
- Knowledge management helps in decision-making process and thereby reduces the cost of erroneous decisions.

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