E HR's ROLE IN DEVELOPING A LEARNING ORGANIZATION

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By

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Executive Summary

The purpose of this research paper is to explore theories of E-learning, knowledge reusability leading to a firm becoming a learning organization. Along with, the impact and roles played by human and technical intermediaries i.e. Human Resource, Information Technologies. The roles of human and technical intermediaries in knowledge reuse processes, with special focus on the integration of the two intermediaries for the broader goal of organizational learning and developing a learning culture.

Corporate networking with HR placed in every function by using Information Systems, web and HR pages on internet are becoming robust parts of employees life's. Here I demonstrate how e-technology integration has enabled corporate learning architectures, not simply as a new HR supporting tool (training & development delivery media), but as a tool with its distinctive impact on, organizations with learning culture initiatives.

In the light of changed learning needs in companies today, I seek to answer the role of HR functions in this changing environment, with special focus on specific aspects such as training, Development and cultural change. Study involves company's information collected from articles on the web, collection and analysis of financial annual report notes and data, It is the capacity to learn that, more and more, establishes the relative success of individuals, companies, and entire nations. At the organization level, learning must become continuous. This process, called organizational learning (Cyert and March, 1963; Argyris and Schon, 1978), is the way by which organizations acquire knowledge and experience. Information and communication technologies (ICT), virtual teams, groupware technologies,

and distance work are new forms of work that are today a steady and increasing reality.

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Chapter 1: Introduction

1.1 Overview of this Research Thesis

New software for data collection, like online forms, order entry forms online resume make it easier for HRM to deal with employees and customers. For example using touch-tone phones, IVR technologies, makes it easier for employees, anywhere in the firm to contact HR. Use of PC's in high traffic areas, and kiosks throughout the company, no matter how widespread the firm, makes it easier to look for the information needed by the employee, and they could even modify their personal information themselves, without HR's assistance. Corporate networking with HR placed in every function by using Information Systems, intranet, WAN's and HR pages on internet are becoming robust parts of employees life's. Even activities like online interviews or computer assisted job placements are coming in the picture. The underlying theme is to allow workers to perform their basic HR tasks them selves. Plus freeing HR form day to day activities, transactions, and making it more useful decision making partner of the company.

The purpose of this thesis is to demonstrate how e-technology has enabled & been integrated into corporate learning architectures, not simply as a new HR supporting tool (training & development delivery media), but as a tool with its distinctive impact on the whole organization in developing a learning organization, an organization with learning culture.

I accept the idea that technology and the way people and organizations use it, act together in re-shaping social and organizational practices with special changes brought in HRM practices. Thus in this thesis, I do not regard the Internet as the external driver of change in corporate training, but as one of the factors contributing to innovation in training activities in the business environment. In the light of changed learning needs in companies today, I seek to answer the question:

How are corporations really managing the inclusion of e learning in their learning strategies? & the role of HR functions in this changing environment, with special focus on specific aspects such as training, Development and cultural change?

The way I answer my research question is through organizational studies. In fact, because my purpose is to understand the role of technology in reshaping the way companies plan and distribute information with special focus on training & learning activities, I focus on how the Internet, intranet and related technologies are used in specific situations. A direct examination of what companies are actually doing in this field can, in my opinion, shed a light on the field. Thus, to understand what is really happening in typical corporate organizations, the best way to study the topic is the analysis of non-comparative,* corporations in their different and specific approaches to the development of e-technology as a developmental tool specifically.

The organization's analysis can provide a solid understanding the company, of its needs, and of the specific e-project. For the main studies that I consider in this thesis, this knowledge has been acquired through internet, each company in the study. My study involved company's information collected from articles on the web, collection and analysis of financial annual report notes and data,

I found three organizational studies – Horizon Blue Cross Blue Shield of New Jersey [A], The Coca-Cola Company [B], and HMSHost [C] .

In the literature review that follows, I both establish the theoretical background and context for e- projects adoption and development, and outline the theories, literature regarding information as a resource, information systems, the impact of information systems on organizations, the advantages and disadvantages of technologies which I use to frame my analysis and support my interpretation of the findings.

Plus the role of information systems in HRM, Changes required in HR in information age and ROI of Human capital are also highlighted in the case.

A; See Appendix A

B & C Refer to the Findings Sections (The Company's information used to support the thesis are in the form of "a kind of Case study")

Chapter 2: A Context and Literature Review

"In the 21st century, the education and skills of the workforce will be the Dominant competitive weapon" (Lester Thurow)

2.1 Overview of Knowledge Management & Learning

In recent years information and communication technology (ICT) associated with the transition from an industrial to a knowledge-driven or learning economy have been the epicenter of a profound change in the way organizations work and compete. This transition has altered the way in which companies create value, giving priority to their intangible assets and, specifically, to their ability to manage knowledge and information. The capacity of organizations to activate learning processes has become a crucial determinant for performance and competition. In this situation continual learning is fundamental and companies are looking for new ways of creating and transmitting knowledge and training to their employees. The application of the Internet to training and learning, or e-learning, is one of these ways, one that has recently raised great attention and expectation.

According to the 21st Annual Industry Report of Training Magazine (October 2002), which details the formal training activity of U.S organizations with 100 or more employees, in 2002, $ 54.2 billion was spent in the U.S. on workforce development programs. Even if 3% below the previous year, an instructor-led classroom still remains the preferred form of training delivery (74% of all courses). Instructor-led courses from a remote location through web or videoconferencing and delivered by computer, amount to 19% of the total*. To claim the end of the classroom is undoubtedly premature, but there is evidence that companies are shifting a significant part of their training investments to technology-based forms of training activities, or e-learning.

For many companies, e-learning is attractive because it is perceived as a quick way to cut training costs, and a cost- effective way of delivering training to dispersed workforces. Companies start to integrate tools that collect and distribute information, such as web sites and online repositories, to reinforce and, in some cases, replace training. The possibility to take advantage of e-mail, discussion groups, bulletin boards and other connecting tools soon complete the picture. Both instruction and access to information are ways of disseminating learning, and the Internet (or intranet) naturally offers a flexible technology around which to organize a new way of thinking about learning in general. Thus, the adoption of e-learning is more than just the launch of a new technology. Its introduction in the corporate environment is, in my opinion, one of the factors determining a change of companies' training functions and learning activity.

Buying the technology seems to be the easiest part of implementing e learning.

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* "2002 Industry Report", *Training Magazin*e, October 2002

In fact, it is not just the technical innovation that drives e learning, but its success depends on building a strategy that optimizes the technology within the organizational culture and other learning channels. To be effective, e-learning requires an integrated learning strategy and a clear vision of its role into a larger, multi channel learning experience. In practice, this is not often the case, because companies have adopted e-learning without a strategic view of its development. Lacking a clear strategy, they have built web sites or courseware without a common thread.

2.1.1 Context and Background of e-Technologies in Business

Why companies are adopting e learning: our changing relationship to knowledge and work? Why has e-learning gained momentum in recent years as the ultimate way to train people and distribute learning across organizations? Why have so many companies confidently introduced this technology-mediated form of training?

The answer to these questions requires a review and understanding of the context of e-learning in recent years many factors have contributed to impressive changes in the workplace: increase and globalization of competition, introduction of new technologies, expansion of service industries, and professionalization of work. All these factors are inextricably linked, at the same time enabling and being driven by each other. While the industrial economy was concerned with manufacturing tangible commodities and competing on the best allocation of existing material resources and prices, the post-industrial economy is recognized to be knowledge and technology-driven and competition is about integration and innovation (Romer 1986; 1990, Lundvall and Johnson, 1994; OECD, 1996; Foray and Lundvall, 1996: World Bank, 1998).

Richard Florida in his recent book *The Rise of the Creative Class* (2002) argues that creativity is the present, real driving force of economic growth. This rise of human creativity has been the major force of social change in the past fifty years and the key factor in our economy (2002,4). Our current economy is powered by human creativity (the ability to create meaningful new forms) as the decisive source of competitive advantage. In virtually every industry, Florida argues, from automobiles to fashion, food products, to information technology, the winners in the long run are those who can create and keep creating (2002,5). As the fundamental source of creativity, people are the critical resource of the new age (2002, 6). Florida sees the emergence of a new social class comprised of 38 million workers, more than 30% of the American workforce, which uses knowledge and creativity as the primary source of individual and economic value.

In this changed environment, both individuals and companies are forced to embrace a process of continuous improvement and innovation, to produce and distribute new knowledge, because their value-creating capacity depends on it (De La Mothe and Paquet, 2000; Best, 1990; Wikstrom and Normann, 1994).

It is the capacity to learn that, more and more, establishes the relative success of individuals, companies, and entire nations (Cameron, 1996; Lunvall and Johnson, 1994).

These trends have changed our relationship to knowledge and work. The speed of change the rate at which new knowledge and skills appear and become obsolete, is remarkable. Skills and knowledge acquired at school or at the beginning of a career are no longer sufficient during a worker's entire professional life (Levy, 2001). Knowledge, information, and professional skills have a shorter lifetime than in the past. The fast rate of change and innovation, and the creation of new knowledge in science and technology determine the pace. While new products and services emerge with accelerating speed, the life span of products is shortened. Innovation is now the critical competitive force; therefore information and skills quickly obsolesce. Individuals and groups have to face an unstable and changeable stream of knowledge that no one can predict (Davis and Meyer, 1998).

These changes in the competitive arena have favored the transition to forms of work where immaterial activities and the ability to manage knowledge and information are among the most important factors of success for both people and companies (Drucker, 1994; Stewart, 1997; Sveiby, 1997). Because this massive shift from a production-based economy to a creative economy has put more pressure on value creation through knowledge and innovation (Clegg, 1995; Rifkin, 1996), acquisition and application of knowledge are no longer reserved for a small, elitist group. Today, they are the general needs for masses of people in their work as well as in their life.

For all these reasons, continuous learning and education are today fundamental factors for companies that want to gain or maintain their competitive advantage through the enhancement of their human capital (learning embodied in the workforce), and for individuals who want to maintain employability and professional competence in the long run. At the organization level learning must become continuous. This process, called organizational learning (Cyert and March, 1963; Argyris and Schon, 1978), is the way by which organizations acquire knowledge and experience.

As continual learning has become a basic requirement, work and learning are converging. This convergence is taking place not only at a managerial level (Brown and Duguid, 1991).

At the same time, technological advances have changed many well-established ways of working and communicating, increasing the complexity and velocity of the work environment (Marquardt and Kearsley, 1999). Information and communication technologies (ICT), virtual teams, groupware technologies, and distance work are new. Forms of work that are today a steady and increasing reality (Kistner, 2001; Solomon, 2001).[1]

All these changes have led to new learning needs: on the one hand companies must train more people, at all levels, faster, and at a lower cost than in the past. On the other hand they have to enhance the quality and effectiveness of their training.

In recent years, many have claimed that e-learning is the right answer to these changed training and learning needs, the only possibility of meeting these difficult challenges. E-learning has been described as the "new frontier", "a paradigm shift in the way education is viewed and delivered"[2], a "new vision of learning"[3], and the most efficient and effective method for rapidly distributing knowledge. While the Internet access has become a standard for all companies and advances in digital technologies

have enabled the creation of interactive, media-rich content, the introduction of e-learning has not been as simple. It is a difficult process that companies undertake hoping for a resolute technology. Instead, they find problems to confront. E-learning can surely be regarded as a way to face the thorny problem of continuous training and learning at the individual and organizational level, but it is a part of a larger solution, and cannot stand alone.

2.1.2 Information rules: an economic model to interpret e-learning

Learning and knowledge creation at firm's level is the way to the future in today's global environment. Because e-tools are an information good, & e-learning its economic characteristics are not secondary in determining its adoption, deployment, and development in organizations. In this thesis, some of these specific features are used to help explain choices and developments of e-programs in the considered case studies. In particular, the economic cost structure of e-learning systems is viewed as a conditioning factor of its development, and that the size of the network of users determines both the financial viability and the learning outcomes of the program.

2.1.3 Different Perspectives on Technology and Organizations

Information age Technologies have been seen as fundamentally altering the organizational landscape, sustaining change and transformation. E-learning has been praised as a revolutionary tool for education and learning. Its adoption, however, needs to be put in perspective. It is not the first time that technology is seen as the driver of change, but the relationship between technology and organizations has always been characterized by a two-faced perspective. On the one hand, the impact of technology on organizational structure and performance has been emphasized, where technology is considered a causal agent or a constraining force shaping organizational structure and affecting work. This notion is called technological determinism. In this vision, technology itself plays a fundamental role in leading to social and organizational change.

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1 Recent research on the diffusion of distance work shows an increasing trend: in the US the number of distant workers has increased from 20 million in 1999 to 24 million users in 2000 (+20%). Kistner 2001, Solomon, 2001.

2 "E-learning, A key strategy for maximizing Human Capital in the Knowledge Economy", 2001, a white paper by PrimeLearning.com, www .ASTD. Org/virtual_community/comm_erlng_rdmap/ whitepapers

3 Horton W., 2000, *Designing Web-Based Training*, John Wiley &Sons, p. 22:

On the other hand, it has been argued that organizational structures support innovative processes and vary in relation to their ability to adapt to or generate new technologies (Scott, 1990; Kimble and McLoughlin, 1995).
The first perspective has been dominated since the 1960s by the contingency theory. Contingency theorists considered technology as objective, as empirically measurable characteristics of the work process, and regarded organizational structure as a static form or configuration. Generally, the theory puts the accent on the interdependence of organizations and their environments (Lawrence and Lorsch, 1967).
From the beginning, technology has been stressed as a central factor shaping organizational structure (Woodward, 1965; Perrow, 1967; Thompson, 1967, Galbraith, 1977).

In the 1970s a different conception began to emerge, that considered structure as a process. Contributing to this revised conception have been organizational psychologists, such as Weick (1969), action theorists, such as Silverman (1971), and symbolic interactionists, such as Goffmann (1983) and Strauss (1978). In different ways they propose that structures are more correctly envisioned as interconnected behaviors, as patterned actions that are continuously produced and reproduced, or as negotiated forms continuously undergoing modification and renegotiation, rather than stable structures.

Giddens (1979; 1984) proposed a vision of social sciences where human action and social structure are mutually dependent constitutive variables. Social structure is seen as a duality where action is both "constituted by" and "constitutive of" social organization: "the structural properties of social systems are both the medium and the outcome of practices that constitute those systems" (Giddens, 1979, 69). Therefore, technology is seen as a virtual structure that facilitates and, at the same time, constrains action, that shapes it and that is shaped by it. Consequently, technology cannot fully determine organizational design, and the most important factor is the interplay between action defining structure and structure constraining action*1.

Technologies do not necessitate a given structure, but allow a range of possible structures. Weick, (1990) stresses the value of a subjective view of technology and its *equivocal* and complex nature. Noble argues that "the process of technological development is essentially social, and thus there is always a large measure of indeterminacy, of freedom, within it…Therefore technology does not necessitate. It merely consists of an evolving range of possibilities from which people choose." (1984, xi)

**"Decision Maker's Guide to their Adoption*", 8 March 2002.

*1 http://www.masie.com/standards/S3_Guide.pdf

2.1.4 Information Technology & Organizational Change

The issue of information technology inducing organizational change is a part of this ongoing discussion about their mutual influence. It is even more relevant today than in the past, due to the role ICT is playing in the transition from an industrial society and the so called knowledge-driven or learning economy. Much has been written about different aspects of this subject. In this thesis, I only examine one approach to this relationship, the perspective that I find most useful for analyzing the introduction of e-learning in the companies studied: Computer Supported Collaborative Working (CSCW).

CSCW is an interdisciplinary approach that links IT and ICT to an emerging perspective on the nature of work, learning, and the role of technology in the workplace. The central problem of this interdisciplinary field is how to produce a technological and information systems infrastructure that supports work process in organizations. Within this variegated field, a new view on the nature of work and organizational learning and its relationship with technology has been developed that is a useful framework for analyzing the introduction and successful development of e-learning in organizations.

CSCW can be defined as an "umbrella term" under which scholars from different disciplines come together and discuss the way people work and how computers can support collaborative work (Grudin, 1994; Bannon, 1998).

Of particular interest to my research is the way CSCW provides a perspective from which to understand work processes and practices and their support by IT. The focus is on cooperative work that comes out as a feature of the way work is performed. Opposing the traditional, procedural conception of work that sees people performing tasks formalized on organizational charts and following procedures established by managers, the CSCW approach values the ethnographic studies of work, focusing on the practical ways people "get the work done". The emphasis is on the "working division of labour" (Anderson, Sharrock and Huges, 1987) and on work practices, not on the traditional model of division of labor. The accent is on the role of people in accomplishing work, organizing and supporting each other, and learning in communities as the main factors of organizational development. Many ethnographic studies of office

Works have shown the complex nature of supposedly routinely jobs and the intricate negotiations co-workers engage in to get activities done (Wynn, 1979; Suchman, 1983; Gerson and Star, 1986; Orr, 1992; Wenger, 1998). There always seems to be a significant discrepancy between official procedures described in job descriptions and performed actions. Emphasizing work practices, learning in communities of practice, and situated learning and action (Suchman, 1987; Lave and Wenger, 1991) Pat Sachs (1995), argues that we need to rethink the nature of work, abandoning an "organizational" view. grounded in scientific management ideas of tasks, training, procedures, workflows, and coming closer to an "activity-oriented" view focused on learning, know-how, networks, work practices, and communities of practice.

The situated learning theory (Lave, 1998) supports this approach. It conceives learning in terms of participation in social practices, as occurring continuously with ongoing activity by individuals. The place of learning

moves beyond the individual into the connections between individuals, always related to a shared context. Knowledge does not have an ontological value, but is organically included in a web of relationships. The situated learning perspective emphasizes the relational nature of learning and knowledge (Latour, 1989) and the negotiated character of a common semantics (Eco, 1979). Learning is participation in a community of members who find their identities in a definite, shared and negotiated set of practices. This community represents a social system that regulates collective learning (Boland and Tenkasi, 1995).

A practical implication of these perspectives is that the representation of work is often inadequate and can be misleading when used as the basis for IT development. Thus, any effort to support work through information technology must take into account the nature of work and learning as described by this approach, and be aware of communities and their practices in order to sustain them. Consequently, utilization and development of information and communication technologies in organizational settings should be grounded in a deep understanding of actual work practices instead of being designed on a bureaucratic conception of organizational work (Bannon, 1998).

E-technologies allow codification and storage of training in a digital format, favoring the distinction between its production and its fruition. From this point of view, e-learning transforms training into a commodity that can be stored and retrieved as any other industrial good, without having to put together trainer and trainee at the same time and in the same place. It treats it as a static product. The idea of work implied in this application of e-learning is still the tayloristic view of work as individual tasks coordinated by supervisors.

On the other hand, if learning is seen as social and situated, based on involvement in communities of practice, e-learning can valorize its participatory over its informational dimension, using network technologies that sustain connection and communication among members. It all depends on the coherence of the learning strategy with the organizational and cultural environment of the company.

2.2: Organizational Systems

2.2.1 Transitioning Work Roles in Organizations

A study of US federal work force (Personnel Research and development Center 1994) provides useful insight into today's work, as well as a baseline for future studies of this and other segments of the world's work force.

A survey- Of the federal work force was under taken to determine how employees identify, use and manage the information they need of their jobs and to support their agency missions. The results provide General services administration the data that it needs for its US wide information resource management for...& to hope US govt. agencies become more information proficient

More then 5000 employees responded to this survey Vis a Vis entire population of federal civilian employees; the percentage figures reported are 'accurate within +/- 1.3 %, at the 95 percent level of confidence.

The study addressed how far along the workforce is in the transition employees emphasize decision making over analysis. Further, more, communicating information, an activity critical to making and implementing decisions, has virtually the same emphasis as decision-making.

2.2.2 Tasks & Informational Needs of Employees

The survey probed the types of information related tasks employees perform. The tasks, with the percentage of employees that perform each on a typical day, are summed up as:

- Make Decisions, 75%
- Communicate information ,policies , or decisions to others , 74%
- Analyze information, 69%
- Enter or compile information in an existing form, format, or program, 61%
- Retain, preserve , or store information, 53%
- Create documents , data bases , or spread sheets, 48%
- Perform general administrative tasks, 44%

In an era of glowing complexity, you probably suspect that employees gaining knowledge of process and procedure is important. The survey backs that conclusion

The survey studied the information employees need for performing work for their agencies. The types of information, and the percentage of employees needing each type, are:

Internal agency policies and procedures, 81%; Federal regulations and laws, 78%
Federal agency activities, 37% ; Reporting or filings from vendors , companies or individuals required to report specific information to the agency, 35% ; Requests form public, 33% ; Information from vendors for purchases or contracts, 32% ; Personal data , 32% ; Financial or accounting statements, 30% ; Scientific data, 27% ; State and local government activities, 25% ; Congressional activities, 22% ; Results of surveys or questionnaires, 21%

Having adequate information of appropriate quality is essential to one's job, and the survey provides just that.

Although this survey talks about US government employees the author believes that, the situation in organizations is not very different when it comes to the tasks performed by the personnel in all kind of functions.[3]*Information proficiency (Thomas J . Buckholtz, Ph.D.)*

2.2.3 Knowledge Management in Organizations

Knowledge management is the area of organizational management that pursues the explicit and systematic management of *intangible asset*s, such as knowledge regarding products, markets, processes, technologies, and systems that a company owns, and of *processes* of creating, gathering, and organizing, diffusing, and using knowledge. Knowledge management aims at turning personal knowledge into corporate knowledge that can be shared throughout an organization and appropriately applied to generate value. Knowledge management activities are meant not only to identify, analyze, distribute, and share existing knowledge, but also to find ways of creating new knowledge and innovation. Many knowledge management systems are supported by technology and facilitated by the use of the Internet.

The work of Nonaka and Takeuchi (1995) started the interest toward this discipline. The authors apply the distinction between *tacit* and *explicit* knowledge (Polany1966) to the organizational context. Explicit knowledge is that which is written down or expressed in some tangible forms, and is transmissible in formal, systematic language, such as words or numbers. In a company, such knowledge can be exemplified by transaction data on all of its processes, projects, customers and vendors, research logs, patents, trademarks, marketing strategies, and business plans. Although this kind of knowledge is the one that has been more valued in Western companies, it is only the tip of the iceberg. The iceberg itself is made of what the authors call implicit knowledge.

According to their definition, tacit knowledge "is highly personal and hard to formalize. Subjective insights, intuitions and hunches fall into this category of knowledge." (p.59).Tacit knowledge is communicable through mechanisms such as observations, conversations, and on-the-job learning. Most of the real value of intellectual capital is in the heads of knowledge workers: their skills, experience, hard-won insight and intuition, and the trust they have invested and earned in relationships inside and outside of the organization (Barth 2000).

These two kinds of knowledge are different but complementary and the process of knowledge creation depends on both and on their continuous conversion into one another. Knowledge creation, as Nonaka and Takeuchi describe it, is the process that goes from the initial acquisition of information from the external environment to the realization of products and services as sources of a firm’s revenues.

The organizational knowledge creation process is viewed as a continuous spiral Where, each knowledge conversion brings different contents and contributes to the emergence of innovation. The spiral starts at the individual level and moves towards group, organizational and inter-organizational levels in a never-ending movement.

2.2.4 Technology & Information in Organization Behavior Paradigm

Most information age conventions start and with technology. This is good news and bad news together.

The **better** aspect is that technology is providing to be immediately useful. Indeed, we find it difficult to imagine conducting business without telecommunications, facsimile machines, and computers networks etc. A society not having these and other information technologies like televisions. Technological improvement is continuing at a vigorous pace.

Bad aspects are things like over attention to technology distracts us .Precious time debating with technology to use .Plus time and cost of buying, installing and maintaining technology. Yet more time goes into learning to use new technology and tying to cope between differences and glitches between technology and systems.

The attention to information, how one uses, that information and, to our goals for which information and technology are but means to ends. Most critically, the attention to people as without them the goals cannot be persuading regardless of the robustness of technology. These questions present opportunities for organizations. Those who want to and will succeed in the information age are focused on their goals and then considering the more specific issues, such as working with people , understanding and using information and using Information technology.

An employer, a community or a political / social entity and countless others face the same challenges to pursue its goals through appropriate attention to three critical aspects

- People
- Information & Knowledge
- Technology

It is summed up in FIG 1

3Information proficiency , The author Thomas J . Buckholtz, Ph.D., California institute of technology, consultant in Portola velly near san Francesco, commissioner general of information resource management services U.S General service administration, 89-93.

Context is Goals and Results
Focus is Achievement
Definition A: The effective use of information to define and achieve goals

Context is Process
Focus is Quality
Definition B: Quality in making and implementing decisions, including
Proficiency with information, to make decisions and there be set goals.
&
Proficiency through information to implement decisions and thereby achieve results specified by goals

2.2.4.1

Organ
resem
several subordinates.

Traditionally attention focused vertically, especially upward. Information flowed upwards before it flowed across. Organizational units were sought to be self-sufficient. If work could not be handled within one unit, it was handled sequentially by various units, each functioning in isolation.

To sum it all a metaphor is used: Organizations erected Berlin walls that kept individuals and groups from mingling, sharing information, and working together. Computer systems reinforced these walls, with berries of their own walls that kept people form getting information from over them, one system at a time and walls that prohibited information flow between systems.

People outside and inside see and experience consequence like chasing a file or application or for that matter from desk to desk through bureaucracy, acquainting each employees with particulars of the case.

Now in changing paradigm organization still preserve some vertical chain in commands but the rest of vertical paradigm aspects are diminished Decreased depth or organizational charts, Disappearance of clerical units, layers of managers disappeared from the middle, and a further flattening of information disbursement occurred as span of control increased.

Thus, we can say the walls have fallen. Now a day's organization tackles challenges by building teams across functions. For example Ford AD featured Saturn is a classic example teams of designer, engineers and production workers built an efficient car in record time with highest quality a performance of the product.

Along with shift form, vertical information flow to horizontally constituted teams. Here comes the aspect of empowerment (individuals to make and implement critical decisions)

Implicit is the new concept of modularity for a specific opportunity, a team forms works and completes its tasks and dissolves. Organizations have strive for modularity even now , Thus the term Virtual Organization has been coined to denote a business that is proficient in hiring , training and developing , compensation and allying with , groups outside the company to accomplish needed tasks. Unless one can be competitive at a type of work

that one will do continuously, why, devote employees to it? The business contracts for each of these services (manufacturing, designing, marketing and distribution), though it needs to foster teamwork among contractors supplying different services.
Information age techniques and technology are facilitating these changes, especially as computer and telecommunication systems transcend the walls implicit in past systems. Interpersonal communications are facilitated .Routine work is automated using MIS .Organizations focus on the important aspects of their work. They meet their goals through increased information proficiency.
This new organizational behavior is referred as " Horizontal Paradigm" thus horizontality or flatness is emphasized .But some degree of vertical chain of command is important and is necessary to exist .As the peer paradigm is captured in terms of change FIG:2

Goals and Results
Synergistic accomplishments

People and Information Proficiency
Synergy for making decisions and achieving goals

Information and information resource management
Synergy of resources like knowledge supporting decisions

Information systems
Synergistic resources of data and processes

Technology for recoding, maintaining and delivering information
Peer linked technological systems
FIG 2 New Paradigms For Organizations

Here the peer paradigm in the organizations, the most valuable resource of information and people accomplishments is summed up as
Synergy of mission, between people sharing information, enhancing each other's skills, teamwork etc. Cooperative synergy between various, information resources, information systems and, technical components of information systems. The peer paradigm shows that the synergy is needed to grow in order to serve the increasing independence among elements of society.

2.2.5 Value of Information Resource

Pieces of information have value. Invertors subscribe to information services to check at any moment on the price of individual stocks. Similarly, collection of information has value. Businesses buy rights to television series movies etc; corporations amass or amass or buy success to information about their market places, customers, competitors. University archives collect books and CD's.

Information constitutes a resource and in some ways it is like a physical resource. It can be accumulated stored, manipulated and preserved in its value to extend usefulness. Importantly information needs to be maintained. Preserving information resource may require capturing useful information from people who are changing jobs or leaving an organization, as well as care fully combining computer systems before they are placed in a network. Often sharing it does not require giving up its use, so in that sense information is different from physical resource.
Organizations have repositories for their information resources. A law department for example mange's document s pertaining to the company's litigation, & maintains a library of precedent setting cases. A Human Resource department have memories of employees the most useful resource their day to day activities and all else they do while they are a part of the organization ranging from salary, bonuses to leaves , vacations , special accomplishments, not so good moments , performance of months , quarters and years etc .
Segmenting information resource and identifying them could be by factors as

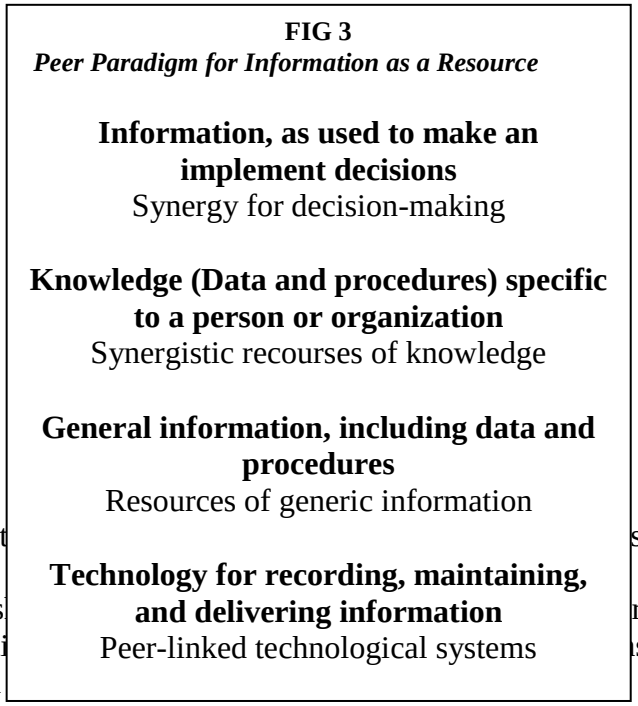
- Information subject
- Group maintaining the content of the information (could be HR or other information relevant functions)
- Group storing and helping others retrieve it (typically IT Dept.)
- Technological systems used for storing and retrieving information

No doubt expertise are required to do all these tasks .These divisions have built barriers impeding access to information by people who may not know it is available or have no convenient ways to retrieve or enhance it .
But the advancement in information technology are closing the gaps between industries (as TV, Radio , Movie), as well as within the organizations with networking , central storage, and systems like (MIS, DSS, ESS, EIS etc).Plus companies in one field are buying rights to information traditionally associated with other fields. Service providing companies are crossing traditional lines as well. Thus a new paradigm of in formation as a resource is emerging, just like new paradigm for organization has emerged in previous figure 2 (Peer Paradigm for Organizations). This anticipation or Peer paradigm for information resource has emerged in layers starting from bottom see FIG 3.

- Basic information technology falls in one peer class. Just as it was not long ago television stations showed movies, over laps will grow and distinctions will wane among computing, various forms of telecommunications, Broadcast TV, cable television, radio, theaters, video conferencing and mobile communication systems.
- All general information falls into a peer class that mixes many forms of information, including TVs programs, computerized data bases, publications. This class also includes automated and manual procedures for selecting general information and for using this information to generate information specific to a person or organization.

- Above these two peer layers is a third, namely Knowledge , both data an procedures, specific to individuals and organizations
- On top of the third layer lies synthesized information used to make an implement decisions.

FIG 3
Peer Paradigm for Information as a Resource



This all changes t still to day [4]

As this system s rveyors of general informati sumers of those service and

As all parts of organization, share a common infrastructure of technology for recording delivering and maintaining information. It is more evident to day as network systems are in place in all types of organizations. General information is usually available through use of common infrastructure.

---

4 *(The chapter was Information proficiency CH#4, Managing information as a resource 1995 Tom J)*

As for knowledge that has been specific to, individuals and groups or functions, these people are asked to make the information available to others in the organization. Plus people are encouraged to involve appropriate participants in their decision making and decision supplementing process, there by taking advantage of and enhancing the total pool information thus sharing knowledge and wisdom.

Concisely, all people are responsible for maintaining and making available the information they affect them and their peers. Most people are spared the burdens of maintaining general information by the advent of information technology which includes central storage and delivery infra structure along with retrieval systems. However regardless of strategy there are costs of keeping up with useful information age advances. But having an appropriate information resources strategy avoids excessive costs and maximizes the

value of those resources, thereby contributing to the organization's proficiency and overall success.

2.3: Organizational Intermediaries and Knowledge Reuse

2.3.1 Intermediaries and Knowledge

The organizational intermediaries are the support functions and technologies etc (as described later) and knowledge reuse M. Lynne Markus's recent study of the knowledge reuse process provides the conceptual framework. The purpose of Markus' research is to begin developing a theory of knowledge reusability, with particular emphasis on the roles of human and technical intermediaries.

2.3.2 Knowledge & Stages of Knowledge Reuse

The knowledge reuse process consists of four stages:

(1) **Capturing** or documenting knowledge: Capturing knowledge can occur when teams or communities of practice generate archives of electronic communication

(2) **Packaging** knowledge for reuse: Packaging knowledge is the process of culling, structuring, formatting or indexing documents against a classification scheme.

(3) **Distributing** or disseminating knowledge (providing people with access to it): Distributing knowledge can be passive, such as publishing a newsletter, or active, such as pushing knowledge via an electronic alert.

(4) **Reusing knowledge**: Reusing knowledge, the final phase, consists of applying knowledge to new situations, or "recontextualizing" knowledge that was decontextualized when captured and codified (57-93)

2.3.3 Roles of Knowledge Reuse

2.3.3 A) there are three major roles in the knowledge reuse process.

The knowledge **producer** is the originator and documenter of knowledge who records explicit knowledge or converts tacit knowledge to explicit knowledge. The knowledge **intermediary** prepares knowledge for reuse by indexing, summarizing, packaging and disseminating it.

The knowledge **consumer** is the knowledge reuser who retrieves the knowledge content and applies it in some way.

2.3.3 B) Markus in research further segments knowledge consumer groups and

Their knowledge reuse needs into four groups:

(1) Shared work producers

Shared work producers are individuals working together on either homogeneous or cross-functional teams who produce knowledge for their own later reuse. Because they create and document the knowledge they later reuse, they more easily understand the contextual information contained in the documentation and can put the knowledge to effective use (57-93).

(2) Shared work practitioners

> Shared work practitioners are individuals who share a community of practice, including specialists who occupy the same roles in different locations, work units or organizations, such as consultants in a practice area, oil field maintenance workers and **human resource management professionals**. Although members of a community of practice share general knowledge, they ma y encounter considerable difficulty in reusing knowledge produced by other members in the community (57-93).

(3) Expert seeking novices

> Expert seeking novices are individuals with an occasional need for expert knowledge to answer an arcane question or solve an ad hoc problem. Customers accessing technical support FAQ lists exemplify expert seeking novices. Markus cites several challenges facing expert seeking novices:
>
> First of all, they may not know the jargon, the right questions to ask, or the right 'Symptoms' to report. Second, they usually require information that has been carefully 'decontextualized…
>
> Third, they require information to be presented to them in a very accessible way, whether this involves technology or a human 'high-touch' Interface. (57-93)

(4) Secondary data miners

> Secondary knowledge miners are individuals who seek to answer new questions or develop new knowledge through analysis of records produced by other people for different purposes. Although secondary knowledge miners are often completely divorced from the sources of knowledge they try to reuse, they often have specialized training which enhances their chances of successful knowledge reuse (57-93).

Markus observes that these different knowledge reuser types do not always get what they need from knowledge repositories for two reasons: First, the records knowledge producers make purposely for their own use are not likely to meet the needs of others. Second, the records knowledge producers make for others may not meet their own needs, and therefore, they may not have adequate incentives to produce quality documents that meet the needs of others. (57-93)

People are most likely to produce documentation when the documentation is intended to benefit themselves rather than others, when the benefit is immediate rather than delayed, and when the effort is minimal, as when the documentation is produced as a by-product of work itself. However, even when these conditions are met, the immense, time consuming effort required to produce, index and use good documentation can be prohibitive. While acknowledging the importance of information technology in documenting knowledge, she highlights several crucial functions that human intermediaries as fascilitatores or kanowledge engineers carry out to encourage/ facilitate knowledge reuse (57-93).

First and foremost, human intermediaries are largely responsible for abstract ing,indexing, authoring and sanitizing documents. Many companies have

Utilized knowledge intermediaries to produce knowledge objects, or written document s that record a successful team is thinking. Secondly, human intermediaries act as group facilitators. Buckman Labs for example uses a system operator to ensure that the communities of practice make high quality contributions to a knowledge repository (57-93)
Finally, “intermediaries can play important roles not only in…situations whe re knowledge is documented for others to use, but also in situations where people are creating documentation for their own use & reuse Markus points to the example of an aerospace new product design team that established the role of a Knowledge Manager to ensure that :

(1) Valuable information was not left unrecorded in the knowledge repos itory by the road map of the repository and identifying obvious gaps in logic
(2) Entries in the knowledge repository could be reviewed by outsiders by providing an easy way for others to get the information they needed; and
(3) the team was able to make use of the documentation they created by reminding them of past information & helping the people find it when they needed it.

2.4: Human Resource an Intermediary

As it is clear the in the knowledge usage and reusage processes, the particular emphasis is given by the researchers on the roles of human and technical organizational intermediaries. Both in stages of knowledge reuse as well as in roles of the knowledge usage. The Data present with the HR departments is of great importance for the employees and organization's strategic advantage some of the functions and roles of HR specifically are discussed in this chapter

2.4.1 Information Systems in business

2.4.1.1 The Business Environment:

Average companies are becoming smaller, employing fewer people. Traditional organizational hierarchies are falling. Technicians, ranging form computer repair people to radiation therapists are replacing manufacturing operatives as worker elites. Horizontal division replaces vertical division of labor. Business paradigms are shifting form manufacturing to providing services. Work itself is redefined: constant learning, more high order thinking, less nine to five.

2.4.1.2 Data Management & Collection:

Enormous amount of data is available to managers internally and externally The collection is the least difficult task of them all, that is
Analyzing and sharing that data without information technology is nearly impossible. But information technology extends far beyond the simple task of analyzing and sharing the data. Use of data to the data to make critical decisions in a changing world is the real thing of substance.
The simple task of word processing, spread sheets and data base management systems are tools that help only in solving at a personal level. Departments and other higher business levels have bigger tasks and problems at their hands, like data collection, departmental teamwork, sharing information throughout the corporation, and uses or information helps business a competitive advantage.
In order to create and use information systems to its full advantage, knowledge of software, hardware and their limitations, along with strengths helps. As a first step to use a technology is to choose a correct tool for each function or problem, e.g. years after being introduced to spreadsheet a many people even now a day try to solve every problem using a spreadsheet. When better tools are available, that could do it quickly and efficiently. Thus understanding the plus and minuses of each tool, one might be able to choose most efficient tool for each task.

2.4.1.3 Analyzing a System: Management is responsible for improving their jobs extending their company's influence. By the use of information systems managers can successfully evaluate current operations, options available, and explore new alternatives. Thus, information system plays key role in organizations. IF we use a scientific approach to analyze systems, identify problems, and generate possible solutions a good approach is to use systems analysis and design technique (used by programmers and IT professionals, but is similar to systems approach of management) could be helpful in

nearly al business situations. Communicate the needs and requirements to information system professionals in this approach would help professional mangers. Mangers need to do some homework also before sitting with professional so that the communication between the two is smooth and progressive. Consider table 1 for an overview of The Decision levels and Types of Information systems

Table 1

Decision Level	Description	Example	Types of Information Systems
Strategic	Competitive advantage, Become a market leader, Long term Outlook	New Product, New trend setter	External Events, rivals , sales ,costs , quality , trends
Tactical	Improving operations without restructuring t	Now tools to cut costs or improve productivity	Expenses, schedules , Sales ,forecasts
Operations	Day-to Day actions to keep the company functioning	Scheduling employees, ordering ,supplies	Transactions , Accounting, Human resources management, marketing m inventory management

Traditionally mangers focus on organizing, planning, controlling. however when observed practically most of the time mangers spend in meetings , reading information form various sources , reading reports , statistics , discussing projects and issues, explaining plans, presenting, and doing numerous other activities. In many ways mangers spend a lot of effort in decision making or contributing to decision making .All these decisions require creativity, data needs to be collected before hand i.e. before a problem arises , it is challenging to design an information system supporting mangers and benefiting the organization . As important tasks of management is to examine the need of information and collect it , which can be used to solve future problems i.e. save it .

2.4.2 Role of Information System Managers at work:

Information systems are Useful in helping manger with present tasks and routine transactions. These systems once in place become indispensable part of mangers work life. Tasks like writing, scheduling, calculating and graphing are performed by managers. One of the most powerful uses of information systems lies in helping managers with these personnel applications. Hundreds of tools exist to help managers with their daily tasks.

Another key role of managers is to analyze the business to solve problems and identify new opportunities. Several systems analysis techniques have been developed to help under stand complex systems. The methods and diagrams can de used by managers to understand how their actions affect the entire company.

The heart of any company is its daily operations .Whether the company manufactures products and provide services, basic operations must be performed continuously. These operations give rise to transactions with suppliers, customers, employees, other firms, and governmental agencies . Transactions must be recorded, aggregated, and analyzed. Information systems are crucial to maintaining, searching m and analyzing transactions.

A firm could have many separate transaction procession systems . Data might be collected for thousands of sources, and stored in hundreds of locations in the form. A data base management system can help mangers find data . It makes it easier to share data with other workers. A data base management system provides several tools to created reports and build input forms with minimal programming .Additionally businesses are more and more relying on PC and of the shelf programming software's due to lowering of costs and technological innovations going on at a fast pace.

Understanding the business is crucial to using MIS to its full potential. One of the approaches is to use the systems approach is used to analyze the business decisions, solve problems, and design new computer systems to support the business.

2.4.3 MIS & Business Problems:

To solve all kinds of complex, and simplistic business problem is a part of mangers life; some problems being solved are easy while others are difficult and complex. It is these & other complex problems that once solved would enhance the effectiveness of a manger as well as the organization's efficiency. We begin with the theoretical task of business analysis by following the Systems theory/ approach. In this approach, every thing is identified to work in a system as part of that system.

2.4.4 Human Resource Data:

A Gold Mine (Mining the gold is evaluating it) and thereby gaining competitive advantage is the next step in HR's continuing evolution. Combining HR data with other business or environmental information allows organizational leaders to act more quickly and make better decisions, enabling them to achieve business objectives.

By marrying quality people information with key business data, decision-makers can gain a better understanding of business processes and drivers.

2.4.4.1 Weighing Resources

During the last decade, most organizations have implemented some form of HR information system (HRIS) to leverage significant advances in technology. By using this technology to assist HR with its transactional functions, many HR departments have been able to position themselves to become fully recognized business partners within the organization. However, once they reach the executive table, few HR leaders have been able to provide the hard analytical data to support strategic business decisions, even though the data exists. HR executives are becoming much more analytical in their approach, and they are much more focused on business with recommendations and guidance.

There is no question that leveraging HR data provides competitive advantage in the critical areas of **turnover analysis, cost analysis, workforce planning and employee development**. The question that remains is: Can HR provide the analysis in a timely and well-understood format? To survive in a competitive market, the answer should be a resounding yes.

> By marrying quality people information with key business data, decision-makers can gain a better understanding of business processes and drivers.

2.4.4.2 Competitive advantage through HR Data

Competitive advantage— can be unearthed through HR data mining in four key nuggets. we examine them one by one

2.4.4.2 A) Turnover Analysis

Understanding turnover and its drivers can provide an organization with key information to manage staffing needs and proactively manage associated costs. Significant competitive advantage can be gained in the marketplace if an organization proactively manages and controls turnover.

The widespread focus on talent shortages in the late 1990s helped to put HR practices in the spotlight and to gain HR leaders a seat at the executive table. The low unemployment rate, in conjunction with the shifting demographics of the workforce—mass exodus of baby boomers, increase in minority representation—and the huge demand for technical skills forced C-level executives to educate themselves on the importance of culture as a key differentiator in the marketplace. Suddenly, an organization's culture and the HR practices supporting it became a focal point for investments and discussions in the executive suite.

While the **availability of funds** was a breath of fresh air for HR executives, the pressure to perform was never more intense. As the **economic downturn** began in 2001 and unemployment rates began to rise, the emphasis shifted away from investment in HR to more-efficient HR functions. While the overall **unemployment rates have risen**, evidence shows that the war for

talent is still raging for certain skill sets, such as nursing and systems engineering.

For example, studies show that more than 85 percent of hospitals have nursing shortages. Why is there a shortage? The answers are disturbing for HR professionals in health care who are challenged each day to solve the problem. Significant contributing factors to the shortage of nurses include:

- In 1984, 51.8 percent of registered nurses (RNs) were under the age of 40. In 2000, that number dropped to 31.7 percent.
- With a current average RN age of 45 and a high burnout rate, the RN ranks will thin considerably over the next five to 10 years.
- Since 1995, enrollment in U.S. nursing schools has declined steadily. Since 1993, enrollment has decreased 22 percent.

As HR professionals in health care begin to understand the talent supply market drivers for nurses, they are better able to position retention-focused initiatives within their organizations. Simply placing an advertisement for an RN is no longer an answer in this scarce talent environment. The focus must shift to **retaining** the talent already existing within the organization in addition to **creative recruiting strategies**.

While **turnover** is a continuous cycle in any business, it **is costly and disruptive** and can have a significant impact on an organization's ability to compete, especially when specific skill sets are involved. For example, a health care organization with 1,000 RNs on staff with a turnover rate of 26 percent will spend $23 million annually due to RN turnover. Even a 1 percent decrease in RN turnover will result in an approximate annual savings of $1 million. Not only will the organization gain a competitive cost advantage, but also by understanding and reducing turnover it will be able to maintain superior patient service by offering the skills necessary to deliver quality health care.

To begin a turnover analysis, HR professionals should ask questions such as: Are particular areas of the organization turning over more employees than others? Are particular geographic regions more susceptible to seasonal turnover than others? Can trends be identified that will help to streamline sourcing, hiring and retention practices?

Identify and Analyze Trends : A key component to turnover analysis is the ability to identify trends and to understand the reasons behind them. Perhaps external market factors are at work, prompting employees to leave one company for another. Or, perhaps internal challenges are leading to increased turnover within a particular business unit. By combining turnover trend data with data gathered from existing HR practices—such as exit interviews—turnover analysis can either validate or invalidate an organization's assumptions regarding turnover drivers. Analyzing key turnover statistics—including total company turnover, turnover by position, turnover by particular geographic region and turnover within a particular function—can help to identify critical drivers. In addition, other key details,

such as workforce demographics—age, race, gender and average length of service—can be analyzed to assess any potential diversity issue within the organization. Turnover trend data can also be compared to national and local employment statistics to accurately gauge whether the turnover is comparable with the current employment market. Continually analyzing turnover trends enables an organization to understand and respond to issues prior to their becoming a disruption to achieve business objectives.

Here comes the usefulness of the information technology in the HR function ease of use and dependability etc. Makes it much more efficient and effective to be used as a tool.

2.4.4.2 B) Employee Development:

A key differentiator for many organizations is how well they provide development opportunities for employees. Employee development provides competitive advantage both by enhancing the skills and knowledge of the workforce and by increasing retention rates of key employee groups. Employee development occurs in a number of methods, out of which most notable are formal training programs and development assignments.

Specific data analysis in the area of formal training programs might include:

2.4.4.2b.1 Costs: The benefit must outweigh the cost. By compiling training-related expenses, an organization can determine the total cost for each training program by region, location or employee demographic. This data can be compared to impact data to demonstrate return on investment (ROI especially of Human Capital) for individual training programs.

2.4.4.2b.2 Usage: By tracking employee completion and enrollment rates, an organization can determine a measure of program usage. The best training program in the world is useless unless measures are in place to ensure its effective implementation.

2.4.4.2b.3 Training impact: Are employees applying what they learned during training? Are specific work-related behaviors changing in accordance with learning objectives? By identifying data elements that can measure pre- and post-training performance, an HR ROI analysis can be completed to assess the success of a company's training program. For example, an organization could measure sales revenue before and after implementing a sales training program. Another area relating to training impact is its effect on employee retention and advancement. Are employees progressing as expected? Have retention rates improved? Has individual performance improved?

In addition to formal training programs, developmental assignments can be tracked in an HR information system. Over time, an organization can construct successful career paths and gain insights into key development needs by analyzing the data available. Skill gap analysis for individual employees can identify gaps to close to meet desired job requirements.

Managing investments in all areas related to employee data will not only provide organizational leaders with the confidence that they are getting a return on these investments, but it will also position the future leaders of the organization for success.

To conduct an employee development analysis, one could look to answer the following questions: Which employees have attended a required training event? Which employees are enrolled for a specific training class? What is the retention time of employees who have completed a specific development activity? What is the correlation between performance ratings and participation in specific development activities? What is the correlation between business unit performance and the implementation of a development program?

An **HR management information system** is running smoothly, and employees and managers have embraced your self-service applications. Are you effectively using the wealth of information that is contained within these systems? Are you leveraging technology to gather and analyze key data that can help you reach your HR management goals? Take the time to determine how you can collect and implement employee data to demonstrate the HR function's value and potential.

2.4.4.2 C) Workforce Planning:

HR can achieve competitive advantage by having the necessary business-related talent available to execute business strategy. Workforce planning is the constant review and management of an organization's workforce needs. Effective workforce planning is accomplished when the process of maintaining current workforce data, forecasting future workforce needs and identifying current talent gaps is streamlined. A fundamental function for most HR systems is to build positions and job descriptions (KSA's of HR), including the key competencies, educational and physical requirements, and experience necessary to successfully perform a particular job. Armed with this information, along with an understanding of the market forecasts and business strategy, an HR leader can more efficiently source, recruit and staff for future business needs. You can make technology work for HR to develop effective workforce management.

Here are some questions to which HR can find answers through a workforce planning analysis. Which employees speak a particular language fluently? How many employees are in a particular job classification? Which employees have a particular skill set? How many employees were rated with our highest performance rating and who are they? How successful are our various recruiting sources? Which employees have completed a specific development activity?

2.4.4.2c.1 Succession Planning Anticipating workforce needs is a critical component of filling positions quickly and, thereby, remaining productive and competitive. Leveraging existing HR data to anticipate and plan for future needs is absolutely critical. Once the needs are identified, the ability

to quickly source individuals to fill positions can often be vital for an organization's success. Filling open positions internally is often the most convenient path to meeting immediate staffing requirements. Easy access to information showing the credentials and capabilities of internal employees—for example, their current roles, and work experience within and outside of the organization, languages spoken and openness to relocation— allows HR to quickly identify internal candidates for particular staffing needs. Succession planning is another important program that can provide competitive advantage. It is important that an organization never be vulnerable because of the unexpected departure of a key employee. By early identification of individuals primed for advancement, an organization can effectively recover when a key individual leaves.

2.4.4.2c.2 Leveraging data within the HR system can also provide valuable **gap analysis information** to guide development plans and assignments for succession candidates. Be proactive is the way to do it with HRIS. Insist that your enterprise resource planning (ERP) systems can be queried to provide replacement candidates when necessary, as well as a fit/gap analysis for skills or competencies. Here are some typical advantages of HR data systems:

- **Transactional data processing.** HR can automate processes with high volume, complex and frequently accessed data.
- **Business data analysis.** HR can manipulate information to allow managers to make timely decisions.
- **Employee access.** HR can enable workers to better manage information relating to their job function and personal data.

2.4.4.2c.3 Learning From Past Success Another key area of workforce planning is the analysis of HR data to understand past successes. For example, it is important to understand the success of recruiting sources to determine where to invest future recruiting funds. Consider the case of a large global technology company that hired more than 29,000 employees within one year. Unfortunately, the company's executives had no idea how many of those new hires matched its critical skill sets. Recognizing talent acquisition as a critical business success factor, the company began to analyze its workforce planning, sourcing, recruiting and induction process data.

After clearly articulating the critical skill sets, including network, systems and various other engineering disciplines, the company gathered data to understand its acceptance, cost-per-hire and retention rates. Executives identified several sources for the critical talent and began tracking the effectiveness of each source. Once HR understood this information, it could direct talent acquisition investments strategically.

Accurate, proactive workforce planning provides competitive advantage. Just as a miner performs research prior to panning for gold, so must the HR manager leverage available information to plan successfully for labor needs.

2.4.4.2 D) Cost Analysis

Aside from the obvious cost implications that employee turnover presents, consider additional costs such as labor, benefits and incentives. Labor cost is usually one of the largest expenses for most organizations, if not the largest expense. Instant access to labor-cost information is critical to determine not only allocation of vital resources, but also whether the organization is successful in its hiring, retention and development practices. As with turnover, by comparing trends and ramp-up costs for new hires, HR can calculate cost per employee to include both opportunity and new-hire training costs. HR can find answers to the following questions through cost analysis such as: How many employees are participating in each benefit plan type? What type of workers' compensation claims are we experiencing and how much are they costing the organization? How many accidents are reported for each business unit? Is our incentive distribution correlated to business unit performance? Company-provided benefits are another enormous cost to manage. For most companies, benefits cost 35 percent to 40 percent of payroll. With the wide array of benefit plans offered to employees, it is important to understand utilization and participation to ensure that benefit funds are being used to their full advantage.

Participation rates are key to this process. As the costs of employer-provided programs and insurance premiums continually rise, awareness of the organization's spending on these programs is critical to maintain adequate cost controls. Understanding employee participation rates can provide justification for future resource allocation to a particular program or for negotiating leverage for more favorable contracts with providers. In addition, by analyzing injury and workers' compensation claims, HR can maintain historical data to manage any potential safety or worker health related issues.

HR Magazine: October 2003 Vol. 48, No. 10 Publications > HR Magazine > Articles A two-part series. HR Information Systems: Note HR Journal column will look at technology's potential role in workforce planning and cost analysis. Beth Patterson is a senior manager and Steve Lindsey is a senior consultant with the Human Capital Advisory Services practice of Deloitte & Touche in Dallas. Sep 2003 vol: 9 **See Appendix D**

Beth Patterson is a senior manager and Steve Lindsey is a senior consultant with the Human Capital Advisory Services practice of Deloitte & Touché in

2.4.5 Changing Dynamics for Human Resources

Some of the key raison d'être for the change in the role of HR in the organizations and as a whole in society are discussed here. Human resources practitioners were talking and pressurizing organizations for years to take them seriously, as they had a role to play that was far beyond what they were currently doing (mainly works on selection, training module assignment, pay rolls, report generation for companies and agencies etc). They wanted to be strategic partners in the critical decision making role this all has been achieved nearly, due partly to a changing world, and partly by long & hard work struggle of HR practitioners.

Management is often analyzed as a collection of disciplines, each functional area has its own tactical decision to be made, but mostly there is some similarity between decisions taken by functions. Most of The information systems are meant to support tactical decisions with the help of data until now at least.
There are functions that are basic to every company, or shell we say that each company needs to account for its sales and marketing its products or services, reward and motivate its employees, make investment decisions. These functions are performed with few individuals or with many employees (Multidivisional format).

> *Competition is surging in every part of the world today, ([1]The economist Merchandise sales 1992-1998 fell by a roughly 12.4%).*
> *"Discount Merchandisers reported: June 2000 that total discount stores in 1999 sold 24% of discounted general merchandise in US."*
> *In EU post consolidation of EU, retail business also consolidated (between1997-2000), European firms opened about 650 stores in countries other then home. 4 of top five retailers in Spain and Croatia are owned by French [2] (The economist)*

The issue of competition increases efficiency of firms and those fitted and flexible enough survive. Thus for manger to be effective the margin of error is very slim. But new advancement in IT and communications are big aide for managers provided they know how to take full advantage of them. To understand it considers the following Section:

1*The economist 1999*- Sears Merchandise sales 1992-1998 US
2 (The economist 2001)

2.4.6 IT & HRM Some Examples

2.4.6.1 Employee Records and MIS: In us for many years, payroll records were the only things computerized. Although there were advantages of having, taxes computed on computer, along with printing of checks. Here most of the pay roll systems were centralized and were not designed to provide data to manger throughout the company.
Today the software form companies like People soft, has moved HR data away form mainframe files to a manger's PC.

In this change the role of human resource department has expanded, along with legal environment, there are new laws, governing safety, hiring and minimum wages, release of workers etc.
Forms salary structures are becoming dynamic rather then static (Hourly salary to merit pays incentive schemes)
HR is becoming more and more responsible for performance management, and critically maintaining an inventory of employee skills. Effective Relationship management of HR with third party firm is also becoming a key aspect of the tasks of HR.

2.4.6.2 Performance Evaluations: New systems of Merit pay, dynamic incentives, gain sharing, and all employee stock ownership plans, are a shift form past. Mostly these system look at critical skills set present or acquired, and current performance of employee who is compensated.
Regular performance appraisals are required, so the appraisal systems are computerized. Each employee is evaluated dynamically. The performance appraisals present in computer could be simulated Vis a Vis certain conditions the, questions can be altered while keeping certain key aspects in mind. Thus enabling mangers to try out various possibilities, check for consistencies, reliability, these systems either are generalized, or especially modified easily keeping in mind the requirement of the system. Automating the systems with guidelines of agencies like OSHA etc is also easy. Making the monitoring of these laws and reports easy then before.

2.4.6.3 Pay Systems Consider an example of merit pay, which is a method distributing departmental pay budget in relation to the performance evaluation rating, also provide sufficient incentive for the employee to remain in the job, as well as meet the equal employment opportunity guidelines.
However, consider that these goals are conflicting, especially with a finite amount of money available to the department. To our aide comes software where we can use raw data as input and manipulate it using simulations and graphics. The values of pay, performance ratings, and even market adjustments could be changed in relation to the actual ratings. New vendor software such as Star office and MS XP office can be used as an effective tool.
Assume that company wishes the raise should be a certain portion of the actual rating, i.e. based on average ratings. The amount of money per point can be changed (currently 100$) and each person can be given an additional market adjustment raise. The total departmental raise cannot exceed the allocated total ($10,000)

The goal is to fill the market adjustment column so that the raises match the performance appraisal. As illustrated in Table 2 (Merit Pay) manger can evaluate both absolute dollar raise and percent increase. The total departmental raise should be equal to $ 10,000. This immediate feed back makes it easier to adjust the raise that one prefers.

Table: 2

				Merit Pay				Raise Pool	$10,000			
	Performance			PCT	Salary ranges ($)			Current	Merit	Market	Total	Rsise %
Name	R1	R2	R3	Perf.	High	Low	Aver.	salary	$100	Ajdustment	Raise	
X	9	7	6	73%	3705	28.4	36.4	35.8	733		733	2.00%
J	3	6	7	53%	18.9	15.4	16.3	17.9	533		533	3.00%
N	8	7	7	73%	30.2	26.7	28.9	29.5	733		733	2.50%
B	9	8	8	83%	23.2	19.5	21.4	19.8	833		833	4.20%
S	3	4	3	33%	22.4	17.3	18.4	17.5	333		333	1.90%
D	5	4	6	50%	60.4	32.5	45.2	53.2	500		500	0.90%
C	6	6	6	0%	32.1	22.2	21.9	21.7	0		0	0.00%
Y	5	6	5	0%	124	9.2	18.9	18.9				0.00%

Here salary increases should be equal to performance evaluations (R1, R2, R3). Mangers are typically given a fixed pool from which to distribute among employees. Every ones raises should be based on merit evaluations, current salary, and the salary range for the job. Market adjustments are often paid to attract workers in high demand fields.

2.4.7 HR's Role in Organizational Effectiveness

One study gives us insight into how mangers and HR practitioners can best contribute in fast-growth companies by encouraging and sustaining employees' entrepreneurial skills. Another related study suggests that HR can improve its relationship with line managers by getting out on the floor where "people problems" originate and by better communicating to line managers the big picture—the reasons behind HR policies. A third study is now in the process of examining how technology affects the delivery and performance of HR services.

Contributing to Fast Growth [4] In a study in US [5](Welbourne and her colleagues) has collected data from all firms going public in 1988, 1993, 1996, 1998 and 1999, noted whether they had a senior HR executive reporting to the CEO and tracked their performance.

4 One of the SHRM Foundation's biggest projects is a multi-year grant as a research partner with Theresa Welbourne, an associate professor in the Organization Behavior and Human Resources Management Department at the University of Michigan Business School and its Samuel Zell and Robert H. Lurie Institute for Entrepreneurial Studies. Her research examines the role of HR management in creating and sustaining an entrepreneurial climate.

5 *In a study in US 2Welbourne and her colleagues have collected data from all firms going public in 1988, 1993, 1996, 1998 and 1999, noted whether they had a senior HR executive reporting to the CEO and tracked their performance. Welbourne* who worked as an HR practitioner for 10 years before joining academia. *who discussed her research in a concurrent session June 28 at the SHRM Annual Conference and Exposition in Las Vegas.*

The lessons learned from these fast-growth companies can be applied to HR departments in bigger corporations as well, because many large companies are trying to become more entrepreneurial.

It is employees' "non-job" roles—roles such as entrepreneur and team player—that really drive a company's long-term performance. Long-term competitive advantage "is a function of firm-specific resource development," says the study, "If everyone is just doing their ‘jobs,' nothing firm-specific ensues. It's the synergy between people and new ideas that creates long-term competitive advantage." Watching firms grow, we learned that, at an early stage, entrepreneurial firms assume that people are doing the jobs assigned to them and that HR—either formally or informally—encourages high-performers engaged in critical non-job roles. In this task, the presence of information system synergizes the task of HR. Some critical findings of the study are:

2.4.7.1 Signal of Destruction

Inevitably as growth continues—and particularly as an organization's growth slows down—someone decides to bring in "professional management" or "the suits," research indicates. When one of the suits is worn by a traditional HR professional, there's a big risk of losing the all-important entrepreneurial climate. Part of the problem is that the first step usually involves job descriptions. Job descriptions may be HR's foundation for recruiting, selection, compensation and training, but it's the signal of destruction to employees in entrepreneurial firms. Years of research has taught that "there exists good and bad human resource management.

Good HR management helps keep the sense of urgency high, and it helps simultaneously create an environment where employees feel valued. They are valued because the company values roles that go beyond the ‘job' role."

Bad human resource management, on the other hand, focuses people on the job. Bureaucracy and rules guide behavior. An emphasis on legal regulations becomes more important than an emphasis on values and vision, as the study indicates. "This type of HR management can kill a firm's entrepreneurial spirit." (*Welbourne & colleagues)*

HR management as a field needs to radically reposition itself, as HR is called upon to do so much police work so much that is controlling. The workload is getting HR nearly schizophrenic. How can you be a police person and a coach? Perhaps, the suggestion could be, to turn the police work that is truly necessary over to the company's accounting department and let HR do a better job of nurturing the entrepreneurial spirit that fuels a company's growth.

2.4.7.1.1 Line Managers Need Big Picture Making HR's interactions with line managers more effective for the individuals involved and for their companies is the goal of another study (Strategic HR study) . The study identified what HR managers and line managers expect and need from each

other and, provide important insights to HR professionals about how they can become more valuable partners, the guidance and support they can offer, and the issues they must address in working with line managers.

In another [6]study of HR mangers; who were interviewed by scientists the interviews addressed key questions such as:

> *What is the greatest HR activity for which line managers have responsibility in terms of importance to the organization and in terms of time that it takes to complete? What are some of the common questions line managers seek assistance with from HR? What needs to happen for line managers to be better at dealing with HR issues with which they come in contact on a daily basis? If you could change HR's relationship with line managers in some way, what would you do?*

The bottom line is found that HR managers need to provide communication that is more ongoing to line managers about big picture issues relating to HR—that is, the "why" behind the policy or practice. Connecting with line managers on their own territory also would be beneficial.

The importance of staffing—including recruiting and attracting the right people, development and placement within the organization, and ongoing employment issues—kept coming up,. Line managers expressed concerns about employee relations, including supervision, counseling and coaching, and motivation. Many line managers also said there was a need for more open communication with HR in order to accomplish company objectives (Cohen says).

Employee relations, performance management and recruitment were seen by line managers as the most time-consuming activities. With so many staff positions open, some line managers blamed HR, while others saw it as their own fault because they have failed to clearly define what qualities they want in employees. Here again the degree of work that HR does comes in question and to aide of HR an IS could come exuberantly.*

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6 Debra J. Cohen, HR management associate professor at George Washington University, Washington, D.C., arranged interviews with a human resource manager and a line manager from 27 companies in 11 U.S. cities. The interviews addressed key questions

* Pease See Related Information In Appendixes

2.4.7.1.2 Seeing People as Problems *"The amount of time people issues took caused many line managers to identify a need for greater interaction with HR advisors and consultants,"* (Cohen). *"In fact, one solution that was suggested often was to have a 'field' HR representative or someone from HR closer to where the people problems occur."* With so much of their time being taken up in people-related issues, line managers tend to see many of the people *activities* that they engage in as *problems*, the researchers adds.

Study found line managers saying that they want more assistance from HR and a greater understanding of what HR does. Several line managers called on HR to become more of an integral part of the line organization, by being decentralized, co-located or assigned to business units. They spoke of the need for accessibility and joint effort.

Moreover, for their part, the HR managers saw a need for each side to have a greater understanding of the role played by the other and less time doing traditional and transactional works. They want line managers who are more developed and educated and who understand what HR is all about so that the HR function can ultimately be more proactive rather than just reactive. One thing that came up often in HR responses that was not evident in the line managers' responses was the concept of respect for each other's roles.

> *"Line managers are doing a whole lot of HR activities, yet they go into this pretty blind. They don't have the background and are thrust into this position, perhaps without necessary skills,"(Cohen).*

In some cases line managers, who already see their job as almost overwhelming, would like the HR department to do all HR functions for them,

According to the researchers, You have a push-pull situation. There are some things line managers would like to give back, but HR doesn't have the resources and the best place to do them may be at the line.

In addition, there is still an element of personnel administration in the HR function. But there are additional elements that are proactive and strategic. For a partnership to work, line managers must be able to handle more administrative duties and HR must be willing to take responsibility for strategic elements (Transformational work).

Thus, It is clear that although for years HR people have been talking about partnership, after this research it is clear that, HR has come as far as we think we have especially in US. There are some wonderful examples. But many issues—discipline, staffing, appraisals—aren't being dealt with effectively when looking at HR and the line.

Virtual HR Technology and HR are coming to terms steadily. Learning how companies can leverage investments in technology to enhance the delivery of HR services. A series of questionnaire based study findings [7]

How does information technology influence the design and delivery of HR activities? How does the extent and character of information technology adoption influence employee attitude, HR effectiveness and firm performance?

The goal was to help understand how adopting information technologies for the delivery of HR activities can either enhance or diminish employee attitudes and performance, the effectiveness of the HR unit and the performance of the company as a whole. Of particular interest in the study is how information technologies are influencing the delivery mechanisms of HR activities such as outsourcing payroll or collaborating with specialists to deliver training programs.

The study examined how issues such as the changing business context and the increased need for flexibility, speed, efficiency and customer responsiveness influence the decision about how to deliver HR services.

The researchers hope to help company's management, HR parishioners, students, consultants and other professionals recognize which factors will help or inhibit the design and implementation of successful delivery mechanisms for HR. Plus shifting needs of external/internal environment require HR to shift its way of doing work.

2.4.8 How to Develop HRMIS system:

Every company has employees; Companies collect hundreds of pieces of data for each employee. Some for management purposes, other because they are by company policy or by law of the country. For years, the human resource management (HRM) department focused on filling out and storing forms. The enormous amount of paperwork alone begs for computerization just to cut down on storage space needed. Computerized database also enable mangers to find specific data on employees. Early HR software emphasized these two benefits.

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7 Study sponsored by the SHRM Foundation. It will examine where technology is perceived to improve HR effectiveness and where it may prove to be a barrier alienating managers and employees. This study is being conducted by Kathryn M. Bartol, professor of organizational behavior and HR management at the Robert H. Smith School of Business at the University of Maryland; David P. Lepak, assistant professor; and doctoral candidate Sharyn Garner.

*June 2000 Vol. 45, No. 6 Publications : HR Magazine , Some of the material used in topics above is avalible at the site .Ben Rosen is Hanes Professor of Management at the University of North Carolina's Kenan-Flagler Business School in Chapel Hill, N.C., and is the SHRM Foundation Board of Directors' vice president of research. (Appendix E& F)

Modern HR software is expanding beyond simple forms to improving data collection and providing better analysis. TO illustrate the problems presented by large-scale HRIS system (essentially Transaction processing system), consider three aspects of Systems approach; input output processes Described in HRM system Figure (FIG 4)

Most employees know that human resource management deals with pay roll and benefits. HRM also collects data and produces reports for myriad government agencies, management informational reports, oversees employee evaluations, and job application and placements. The department also handles training and education opportunities. It also over sees Growth and development as well as employee counseling. However, HRM also goes beyond these tasks especially in the changing world Transactional tasks are reducing of HR and Tactical and strategic tasks are increasing especially due to advent in HRIS information systems.

2.4.8.1 Inputs Data Collection The system as described in figure above is very complex, as the data comes form all parts of the organization. To under stand the HRM system's complexity lets start form the…….. ……..….Staring form obvious data that is needed to be collected, mostly data numbers are related to payroll. For hourly workers system data needs to be collected; monitored with hours worked by each employee. For any sales task, the system must complete sales by employees in order to determine commissions. Professional services firms ask employees to track time in terms of billing hours, as the work has to be charged back to clients. In all three situations, the number of employees increases it becomes difficult to collect all these data and statistics, along with their accuracy verification. It is also hard to find a specific piece of data in such a large number of files and information available.

Consider a paycheck with additional 10, 20 other numbers on pay slip in addition to payment amount. As companies monitor and report several types of pay roll, taxes, including federal government, state, local, social security, and health along with other liabilities. Benefits are also monitored as e.g. health care, over time etc. Deductions are also monitored of employees, purchases, saving plans, stock purchases, parking, medical plans etc. In some cases companies firms must garnishee wages and forward them to a third party.

HR also tracks days taken for vacations, personal time, and illness etc. In large companies, HRM provides training courses and offers testing of critical skills / abilities of employee's attendance and their performance evaluations. All this data is stored and incorporated in employee reports.

With the use of Merit pay complete evaluations are to be tracked monthly, performance management measures tied to productivity or output are measured within the employees work area, section or department. HR must relate employees work schedules to production and quality measures. Thus is most companies now use centralized HRM department to advertise job vacancies, and to screed initial application , verify credentials and keep basic employment details of , hiring , training and productivity like data's.

2.4.8.2 Output: Reports: There are several reports related to employees that are produced for different clients in the company. Consider a few of them

Pay roll produced by HR, along with printing checks. HR must provide expense reports and forecasts to the accounts departments .Periodic reposts for vacancies and analysis of employee performance, along with softer factors such as productivity, morale, motivation, attitude and environment.

The internal reports produced by HRM are very important to the company. HR spends a good level of time preparing reposts for other Government agencies, as well as companies must file various economic reports dealing with employment, and issues like tax, withholding data must be filed regularly with tax agencies etc.

The US EEO (equal employment opportunity) report must be filed dialing with characteristics of work force, job application and hiring decisions.

Te OSHA (occupational health and safety administration) also requires reports from HRM regarding working conditions, accidents, injuries and exposures to hazards at work. Am employee needing certification must be reported to regulatory agencies. All these reports have deadlines.

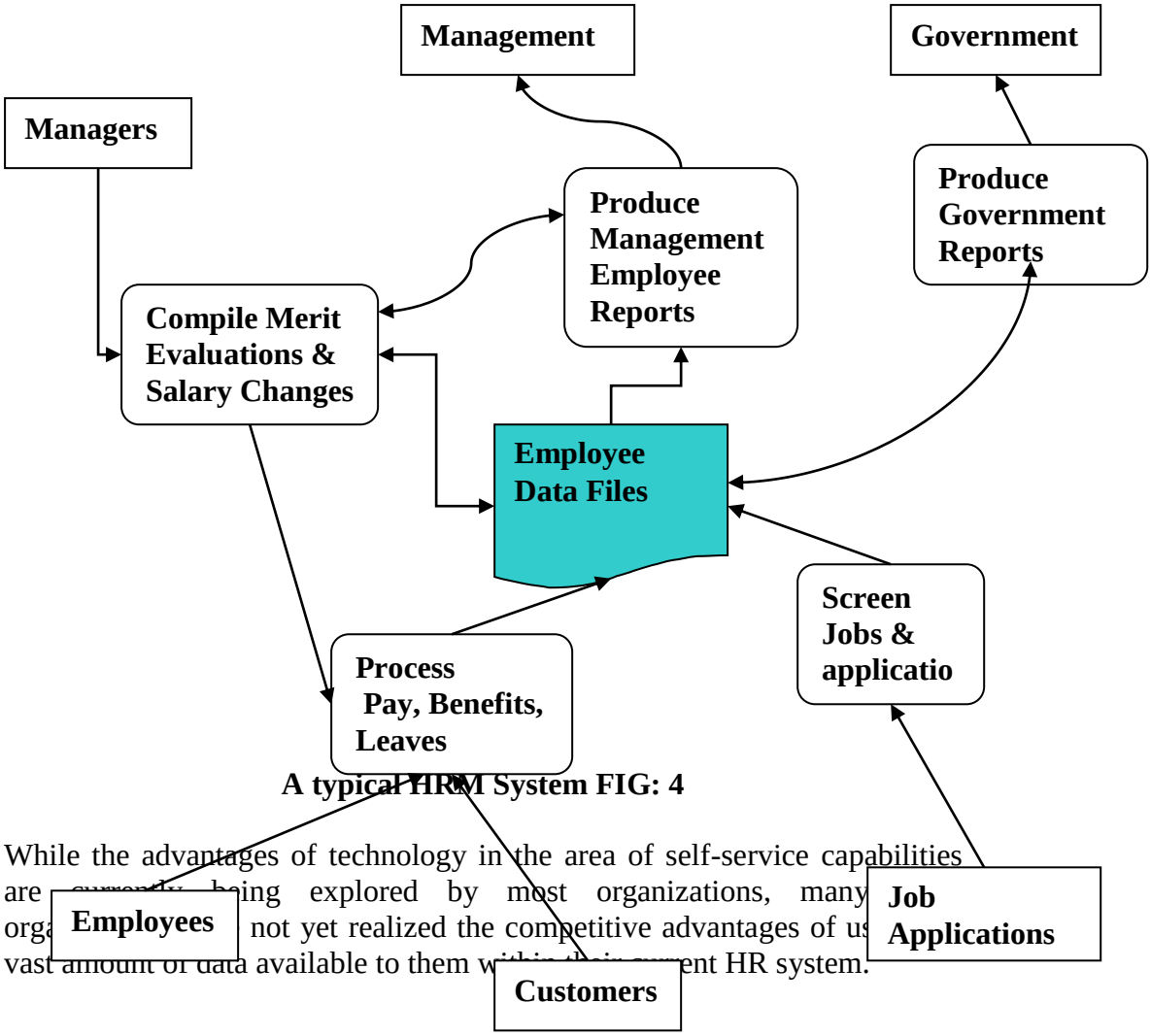
HR is also required for meeting compliance with all relevant employment laws. Hence HRM staff must monitor data for these activities that are Traditional and, transactional in nature. Monitor and evaluate data for expected beaches and problems.

2.4.8.3 Process; Automation HR is a very busy place. The data and reports apply to each and every employee of every department. Even standard items like attendance and paycheck become complicated in a multidivisional, or product team or matrix environment .Errors emissions lead to up set of people. Government report errors can lead to fines, black listing, or law suites.

However, what is good is in efficient HR companies offer employees extra benefits. This could only occur with good HR information system (IS) typically a transaction processing system (TPS). E.g., cafeteria-style benefits could be offered, where each employee could customize his or her own options.

All companies complain in US about burden put on them by regulatory and government agencies regarding reports, data collection, and expenses incurred in the process. An answer to it is an automation of reporting system and efficient HRIS. It could be Changing law's companies have to rely on outside agencies to collect data and print checks e.g. ADP (automated data processing). Also it could be in house data collection and pay roll firms use third party software and hardware's.

From economic reports to pay roll , form internal audit reports to OSHA reports , nearly all has been computerized in US companies .But one still needs to collect data mot only for transaction processing , but also for supporting decision and in forming the top executives abut the state of affairs in company (EIS), these reports require data to be generated .



A typical HRM System FIG: 4

While the advantages of technology in the area of self-service capabilities are currently being explored by most organizations, many orga not yet realized the competitive advantages of us vast amount of data available to them within their current HR system.

2.4.9 Virtual HR System*

By now, you have probably been bombarded with invitations to seminars on using the Web for HR transaction processing and other applications. Or you may have read articles in trade publications. You even may have talked to colleagues who are administering HR over the Internet or their corporate intranets.

Relax. If your organization isn't using the Web for HR applications, you're far from alone. Most experts agree that Web deployment thus far has been limited primarily to online policy manuals and other simple information publishing. Few companies have reached the HR administration and transaction stage. Says [1](David Link)

On the other hand, if you have not yet developed a strategy for implementing at least some HR self- service over the Web, you are in danger of being left behind as the Internet revolution sweeps forward.

Virtual HR is in **its infancy:** Although most large corporations have their own Web pages and may even conduct some business over the Web, such as order entry, few companies use the Web for internal processing. Even fewer use the Internet or corporate intranets for transactions outside their regular line of business. It's no wonder, then, that HR departments have not widely adopted this technology.

"There are very few organizations using the Web for HR transaction processing today," says, [2] (Joel Lapointe), but he predicts the situation will change quickly. Lapointe sees the Web as "a catalyst for self-service." Prior to the Web, companies did not want to deal with all of the connectivity issues associated with varying client/server architectures and the inherent limitations of interactive voice response systems (IVRs) versus visual media, he says. "The universal distribution capabilities of the Web make more possible now, with self-service processing, than ever before." (Lapointe)

Virtual HR includes a wide range of functions, he explains, ranging from something as simple as making a company's HR policies and procedures available through its intranet to managing the development and deployment of the company's most strategic skills.

> *"Virtual HR is in its infancy, with a lot of experimentation going on."* [3] *(Rik Frost)*

Although many organizations are doing some HR-related activity on the Web, but the more important statistic is how many organizations are actually adding value and changing the way HR does business via network technologies. That number is probably close to a few thousand now with both big and small included the potential is still not fully realized yet. When The Hunter Group conducted a survey of companies with Web-based HR self-service, it "had to work hard to find 25 organizations that had been using the Web for any substantial length of time," in late 1998 the number

was near to 50 he adds. Thus, HR transaction processing over the Web even today falls mainly into the category of "potential."

To help understand the differences between information publishing and sophisticated HR transaction processing, let's look at the five levels of Web deployment. Using these levels—defined by the Web strategy team at *TALX Corp*.—provides a good framework for comparing an organization with others. For example, your plans to roll out your first HR transaction application actually may put you ahead of colleagues who brag that their companies are fully Web deployed, but who in fact are only at the information-publishing stage. While some organizations might begin with the first and second levels simultaneously, others will be thrilled to remain at stage one. And each successive stage adds more complexity to the application. That generally means more cost, more time to implement and more responsibility for the users—but bigger benefits.

2.4.9.1 Information publishing

Level-one applications provide one-way communication of general company information to employees. Typical applications in this category include policies and procedures, explanations of benefits, company histories, executive who's-who listings, directories of services, and notices of current events. These applications often contain pictures and graphics to personalize the information and make it easier to understand. The information presented is not specific to the employee, because no database lookup is involved beyond verification of the user as a valid employee.

These applications provide an efficient means to communicate up-to-date company information to employees without the effort and expense of printing and distributing paper documents.

- **Database inquiry** Like level one, level-two applications provide one-way communication to employees, who can access a back-end database that provides employee-specific data in response to user inquiries. Often these applications have increased security requirements because the user is retrieving personal information. Examples of level-two applications include inquiries about paid-time-off accruals and balances, current benefit coverages, personal demographic data, work schedules, retirement plan balances, and electronic pay stubs. By significantly reducing the number of phone calls and e-mails coming into the HR, benefits or payroll departments, such applications can have a major impact on staffing needs. Thus level-two applications begin to change the way you do business.
- **Simple HR transactions** Level-three applications replace paperwork with transactions using electronic input. They combine the inquiry functions of level two with employee updates of personal information on HR databases. This two-way communication is the first step in HR transaction processing and represents a much bigger

change in the way HR departments work. Transaction processing eliminates the paper shuffling and data entry required to process traditional employee input forms. Examples of level-three applications include update of personal information, dependent and beneficiary designations, direct deposit setup, and United Way enrollments.

- **Complex HR transactions** Level-four applications differ from those of level three in the complexity of the interaction between the user and the HR transactions being processed. In addition to database updates, level-four applications involve application branching based on user input or employee file data, calculations or other internal processing of data, and multiple-output transactions.

  For example, in a benefits enrollment application, the system would access an employee benefits profile to display only the benefits for which the user is eligible. When the employee makes selections, the system calculates total costs, subtracts company credits and computes the per-pay-period cost for the employee.

  Once the employee confirms his or her elections, the system can e-mail a confirmation statement, update the benefits system and send enrollment notifications to carriers. Other examples of level-four applications include time and labor reporting, Federal W-4 worksheets, and 401(k) enrollments. Applications like these not only replace paperwork, they remove HR professionals from data collection and maintenance functions, freeing more of their time for strategic analysis and planning.

  Here the main and important thing to note and remember as an HR professional is the The Web is the "key to HR's exodus from transaction management and their invitation to focus on human capital transformation," [4] (Elizabeth Abbattista)

- **HR workflow over the web** This is the Holy Grail for HR executives—giving employees and managers a way to administer their own HR data and processes without paperwork or administrative support. Level-five applications walk users through all of the steps necessary to complete whole processes rather than just discrete transactions. For example, employees who get married may need to change their name, address, emergency contacts, dependents and beneficiary designations. They also may change certain benefit elections and their W-4 withholding status. Traditionally this took many forms circulated through the HR, benefits and payroll departments. Workflow applications automatically walk employees through these steps to ensure that all necessary data has been entered and the corresponding systems have been updated—all without any involvement from HR.

  Another example of workflow over the Web would be to modify the benefits-enrollment application just described by adding direct

extranet links to the web sites of insurance carriers. That would allow employees to view side-by-side comparisons of plan details offered by multiple carriers before making their benefit elections. Users also could select a primary care physician and other providers based on the providers' areas of specialization, experience and geographic location (Lapointe) sees those functions as one of the major trends in employee self-service(ESS). He says future ESS applications "will provide a mix of capabilities including information publishing, HR transaction processing and extranet access to providers to facilitate employee decision support.

Another key benefit of the Internet they see evolving quickly is an easier link with outsourcers that is done more closely to real time [5] (David Link and Bill Minneman). That allows HR to outsource selected processes via the Internet and still maintain data control within the HR management system. Web-enabled tools will provide the platform for wide-scale implementation of automated workflow processes. [5] (David & Bill)

2.4.9.2 How to get started?

"Most companies start with simple publishing of information, and then work toward self-service applications. the goal should be to move quickly from level-one information publishing to the higher levels to truly achieve the investment payback of Web development. To accomplish that, you'll typically need advice from expert vendors and consultants.

* Please Refer to Appendixes

Chapter 3: Findings

3.1 Research Study

3.1.1 Purpose:

The purpose of this research paper is to explore theories of E-learning, knowledge reusability & ultimately the firm becoming a learning organization. In addition, the impact and roles played by human and technical intermediaries i.e. Human Resource and web / information technologies. The roles of human and technical intermediaries in knowledge reuse processes, with special focus on the integrative role of technology with one of the prime organizational resource HR. The impact of an efficient integration! The usability for the broader goal of organizational learning, & developing a learning culture.

The way I answer research question is through case studies. In fact, because my purpose is to understand the role of organizational learning in reshaping the way companies plan and distribute information, I focus on how the Internet/and related technologies (Networking) is used in specific situations. In fact, only a direct examination of what companies are actually doing in this field can be of any significant use, Therefore, to understand what is really happening in corporate organizations, the best way to study the topic is the analysis of non-comparative, corporate case studies in their different and specific approaches to the development of e-culture .

3.1.2 Research Study:

To answer these exploratory questions, a case studies that were available and conducted of the recent knowledge management literature regarding multinational corporations. Accordingly, this research paper enhances existing knowledge management literature by suggesting how organizations may use human and technical intermediaries to improve knowledge reuse processes.

This research study uses theory of knowledge reusability, which emphasizes that both human and technical intermediaries play vital roles in repurposing knowledge repositories to support knowledge reuse processes. While human intermediaries perform crucial functions such as sanitizing documents and acting as group facilitators, both organizational norms (e.g., lack of respect for the Knowledge Manager role) and lack of incentives (e.g., high cost of submitting to a repository) can compromise their ability to support organizational knowledge reuse. As is emphasized in a research which concludes that information technology can perform a part of the human intermediary role, such as automatically abstracting, categorizing and disseminating knowledge a repository content, and proposes that future research should investigate how information technology can take on an increasing share of the human intermediary role for supporting knowledge-reuse.In recent years many factors have contributed to impressive changes in the workplace: increase and globalization of competition, introduction of new technologies, expansion of service industries, and professionalization of work, changes in the way work is done now a days less nine to five etc All these factors are inextricably linked, at the same time enabling and being driven by each other. While the industrial economy was concerned with

manufacturing tangible commodities and competing on the best allocation of existing material resources and prices, the post- industrial economy is recognized to be knowledge and technology-driven and competition is about integration and innovation (Romer 1986; 1990, Lundvall and Johnson, 1994; OECD, 1996; Foray and Lundvall, 1996: World Bank, 1998).

The creativity is the present, real driving force of economic growth. This rise of human creativity has been the major force of social change in the past fifty years and the key factor in our economy. US current economy is powered by human creativity (the ability to create meaningful new forms) as the decisive source of competitive advantage in virtually every industry. As the fundamental source of creativity, people are the critical resource of the new age in future uses knowledge and creativity will be the primary source of individual and economic value. In this changed environment, both individuals and companies are forced to embrace a process of continuous improvement and innovation, to produce and distribute new knowledge, because their value-creating capacity depends on it (De La Mothe and Paquet, 2000; Best, 1990; Wikstrom and Normann, 1994). It is the capacity to learn that, more and more, establishes the relative success of individuals, companies, and entire nations (Cameron, 1996; Lunvall and Johnson, 1994).

These trends have changed our relationship to knowledge and work. The speed of change, the rate at which new knowledge and skills appear and become obsolete, is remarkable. Skills and knowledge acquired at school or at the beginning of a career are no longer sufficient during a worker's entire professional life (Levy, 2001). Knowledge, information, and professional skills have a shorter lifetime than in the past. The fast rate of change and innovation, and the creation of new knowledge in science and technology determine the pace. While new products and services emerge with accelerating speed, the life span of products is shortened. Innovation is now the critical competitive force; therefore information and skills quickly obsolesce. Individuals and groups have to face an unstable and changeable stream of knowledge that no one can predict (Davis and Meyer, 1998). These changes in the competitive arena have favored the transition to forms of work where immaterial activities and the ability to manage knowledge and information are among the most important factors of success for both people and companies especially in functions as HRM with added work load and new challenges the shift is essentially towards automation of HRM and giving HR mangers a strategic role (Drucker, 1994; Stewart, 1997; Sveiby, 1997). & in this the role and activities of HR have changed considerably, because this massive shift from a production-based economy to a creative economy has put more pressure on value creation through knowledge and innovation (Clegg, 1995; Rifkin, 1996), acquisition and application of knowledge are no longer reserved for a small, elitist group. Today, they are the general needs for masses of people in their work as well as in their life.

For all these reasons, continuous learning and education are today fundamental factors for companies that want to gain or maintain their competitive advantage through the enhancement of their human capital (learning embodied in the workforce), and for individuals who want to maintain employability and professional competence in the long run. At the organization level, learning must become continuous. This process, called

organizational learning (Cyert and March, 1963; Argyris and Schon, 1978), is the way by which organizations acquire knowledge and experience.

At the same time, technological advances have changed many well-established ways of working and communicating, increasing the complexity and velocity of the work environment (Marquardt and Kearsley, 1999). Information and communication technologies (ICT), virtual teams, groupware technologies, and distance work are new forms of work that are today a steady and increasing reality (Kistner, 2001; Solomon, 2001). 2

All these changes have led to new learning needs: On the one hand, companies must **heir, train and develop** more people, at all levels, faster, and at a lower cost than in the past. On the other hand, they have to enhance the quality and effectiveness of their training.

E learning is the right answer to these changed training and learning needs especially in the specific context of HR and broadly for the organization. E learning has been described as the "new frontier", "a radical shift in the way training & development is viewed and delivered", a "new vision of learning", and the most efficient and effective method for rapidly distributing knowledge. While the Internet access has become a standard for all companies and advances in digital technologies have enabled the creation of interactive, media-rich content, the introduction of e- learning has not been as simple. E-initiatives can be regarded as a way to face the thorny problem of continuous training and learning at the individual, functional and organizational level, but it is a part of a larger solution, and cannot stand alone.

3.1.3 Research Method & Case Selection:

This research is a secondary research taking use of the research already done in the field of Knowledge usage, e learning and integration of technology with HR function. The three case studies given in the review section and appendix section were taken from online and books (See References)

The case study method was determined to be the most appropriate research method for exploring emerging theory of knowledge, e-learning & new technologies.

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2 Recent research on the diffusion of distance work shows an increasing trend: in the US the number of distant workers has incresed from 20 million in 1999 to 24 million users in 2000 (+20%). Kistner 2001, Solomon, 2001. 3 "E-learning, A key strategy for maximizing Human Capital in the Knowledge Economy", 2001, a white paper by PrimeLearning.com,

HTTP:// www. ASTD.org/virtual_community/comm_erlng_rdmap/whitepapers.html

The case study method examines phenomenon in their natural setting, employing multiple methods of data collection to gather information from one or few entities: people, groups, or organizations (Benbasat, Goldstein, and Mead 370). Key characteristics of case studies include the following:

• Phenomenon are examined in a natural setting

• Data are collected by multiple means

• One or few entities (person, group, or organization) are examined

• The complexity of the unit is studied intensively

• Independent and dependent variables are not set in advance

• The focus is on contemporary events (Benbasat, Goldstein, and Mead 371)

The case study method is especially useful for exploratory and descriptive research, the study of "why" and "how" questions as well as hypothesis generation and testing (Benbasat, Goldstein, and Mead 371). There are three reasons why case study research is particularly suited for information systems involved research:

First, the researcher can study information systems in a natural setting, learn about the state of the art, and generate theories of practice.

Second, the case method allows the researcher to answer 'how' and 'why' questions, that is, to understand the nature and complexity of the processes taking place. Questions such as, 'How does a manager effectively introduce new information technologies.' are critical ones for researchers to pursue.

Third, a case approach is an appropriate way to research an area in which few previous studies have been carried out. With the rapid pace of change in the information systems field, many new topics emerge each year for which valuable insights can be gained through the use of case research. (Benbasat, Goldstein, and Mead 370)

Case study analysis can provide a solid understanding the company, of its learning needs, and of the specific project undertaken. For the main case studies that were considered in this thesis, this knowledge has been acquired through an internet resource (see Appendix), direct contact with each company in the study. The three case studies – Horizon Blue Cross Blue Shield of New Jersey, Coca-Cola Company, and HMSHost. All involved visits and interviews that I conducted in person at the companies' headquarters.(by the researcher's)

3.1.4 Units of Analysis:

Case study researchers determine whether individuals, groups or entire organizations are the most appropriate for the research project. Moreover, the researcher should consider whether generalizations could be made to other individuals, groups or organizations. When the case study is highly exploratory, a single case may be used as a pilot study. The goals of the case study would remain the same, i.e. to determine the appropriate unit and familiarize the researcher with the phenomenon in its context.

The units of analysis for this single case study are employees, HR function , along with the impact of Culture (developing a learning culture), systems as Training impact, development issues vis a vis networking technologies.

3.1.5 Data Collection Method

As already mentioned this is a secondary research with extensive use of Internet resource and books, articles and journals in conducting my literature and findings sections for further details please see References & Appendixes.

3.1.6 Study Limitations

The results of this case study should be interpreted cautiously, as they only reflect the impressions of a small sample of individuals within specific firms. These findings could serve as a starting point for multiple case study research. Moreover, the case study method differs in that the case study researcher may have less a priori knowledge of what the variables of interest will be and how they will be measured. However, researchers note instances of case studies where investigators had previous notions of certain critical variables, such as the types of industries and firms they wanted to examine (Benbasat, Goldstein, and Mead 370).

Other issues are that the focus of my research is specifically limited to, the aspects of developing a learning organization broadly, special impact on HRM's functions of training and development with small touch to pay and performance management systems. Because in Pakistan, not a lot of books and data is available, on the Human resource information systems and new HR technologies.

3.2: Case Study Findings

3.2.1 The Coca-Cola Company

3.2.1.1 Case-description

The company. The Coca-Cola Company, founded in 1886, is the world's leading manufacturer, marketer, and distributor of nonalcoholic beverage concentrates and syrups, used to produce more than 300 beverage brands. Its corporate headquarters is in Atlanta, with local operations in over 200 countries around the world. According to the 2001 annual report, the company's net operating revenues amounted to $ 20,092 millions with 17.8 billions unit cases sold worldwide. Company sells more than 1 billion drinks a day and employs people all over the world. More than 70% of the company's income comes from countries outside the U.S.

The Coca-Cola Company bottling system is largely decentralized and made up of locally rooted enterprises. Learning strategy and organization of the Training function. The company's learning strategy has evolved in the past 4 years. Until 1999, it was more traditionally focused on priorities established by Human Resources and Training Department on the basis of a reactive approach to the requests of managers in the company. The main delivery system was the classroom. In 2003, The Coca-Cola Company learning strategy is completely business-driven, the role of the Learning Department has become one of internal consultancy focused on the organizational and business impact of training. Training and learning priorities are established by business leaders as a part of their.50 business plans, and managers are highly involved in the training process. Training deliverables have shifted from a catalog of courses that focused on content design to a blended mix of learning experiences focused on competences and specific functional needs with strong job-based links. As K H. says:

> *We partner with line managers to build capabilities and align our people with business priorities to enable our growth strategies. We constantly collaborate with senior leaders to create a performance-driven culture around the company. We consider the managers of The Coca-Cola Company our customers and employees our consumers (Interview with K.H., Director Global Learning & Development, Atlanta, 1/29-30/ 2003).*

The learning strategy shift was developed before the technological platform, so at The Coca-Cola, they consider it still in the developing stage. The new learning approach is organized around key competences, but it is still catalog-based. The offer of multiple learning options is classified not on the basis of the technology in use, but as self-paced or group-based. Self-paced learning includes video and audio learning experiences, books and computer-based learning such as CD-ROM programs and online learning via the Internet or the company intranet. The second category, group-based learning, includes classroom events, team meetings, on-the-job learning, and technology-enabled group experiences, such as virtual classroom activities, video conferencing, and telephone conference calls. The technology-based training of both categories is therefore composed by paper-based or web-based self-paced training. Modules and self-paced, multimedia training

(sales, marketing, goods and services, diversity, leadership, management, distribution, and manufacturing), web sites, online repositories, and virtual classroom (Centra Symposium).

3.2.1.2 History and characteristics of the e-learning project. In 1999, with many different HR-related technology activities growing (HR web site, e-learning, Hrsource, a bulletin board on Lotus Notes used as a big database for Coca-Cola) and information scattered around, the need for an information staff within HR started to be felt. The idea was to create a technical group of people inside the HR department dedicated not only to develop the technology, but also to study and manage an information strategy for the entire HR function. This innovative point of view generated an extremely integrated approach to what is now commonly called e-HR, an Information Strategy that outlines what the HR function wants to accomplish through the use of information and technology. The information strategy is illustrated with a story ("Jill's story") of what the company's employee experience will be in the near future:
from web-based job application to the multiple use and functionalities of an HR Portal, from online skills inventory to development guide, e-learning and training self-registration, from self- administration of personal data and web-based applications to internal job openings, and much more, along the individual's career cycle.
Inside the Information Strategy structure there is an e-learning team comprised of five web developers and a web editor. The group develops web courses and CD-ROMs, and assures the consistency of writing, editing, and quality of the web site and technology based tools. They are connected with "button leaders", people around the company who "own" the content of the different sections of the site and guarantee the information to be up-to-date and consistent.

The installation of the LMS in May 2001 derived from a need to support a significant increase in registration activity as well as produce reliable management reports for completion results. Registrations were expected to grow from 1000 to 10,000 a year due to a set of required training programs. In fact, as part of its settlement of a discrimination suit, Coca-Cola agreed to deliver to all its employees mandatory training on conduct guidelines (i.e.: interviewing process, performance management, "Civil Treatment" – employment law, and related matters) and to have an outside group monitor the completion records. Before, the department had three people registering and tracking attendance. The system is integrated with the personnel system data. The company had an upfront investment to set up the design, establish and test data feeds and special functionalities, and hire a project management consultant who managed the whole project for the five-month conversion process. Now, the LMS cost is based purely on transactions.
The launch of the "All about Me" web site, and in particular of the "my career"
section that contains training and learning tools, has been advertised. An internal communication plan developed in collaboration with the Communication Department consisted of brochures, posters, pop-up screens, meeting with managers, internal publications, emails, and demonstrations.

Access to e-learning courses is free: people can take them during work hours,
while classroom courses are subject to a tuition and, therefore, an agreement with their managers is necessary. The company has still to decide a policy about the library of soft skill courses.

> *"I think the true value of a technology approach to learning is the ability to communicate quickly. Speed to market, connectivity between experts, and integration across functions and lines of business more than cost savings, are the true values to the organization (interview with K.H., Director Global Learning & Development, Atlanta, 1/29/ 2003).*

3.2.1.3 Structure and tools All the US-based training is sustained by a Learning Management System hosted by an Application Service Provider, that currently has over 200 activated courses. The entrance point for the LMS is a web site for employees called "All About Me". The e-learning initiatives are comprised of different tools organized around the HR web site 'All About Me":

- Asynchronous web-based courses.
- Synchronous virtual classroom.
- Electronic references.
- Online knowledge databases.
- LMS.

"Civil Treatment" was released in two phases. First, an interactive CD was purchased and customized for managers. Subsequently, the company released a four-hour intranet web-based version for employees with technology access featuring pictures and voice. The course has been online since September 2002 and it constitutes the company's major web program in terms of completion. Its delivery to over 2300 people help to raise the percentage of technology-based courses to 20% of the total training.

Once the LMS was in use, the company implemented the e-learning choice with 20 courses and two off-the-shelf libraries of courses, Skillsoft and Xtreme Learning. The first is a catalog of 150 self-paced licensed courses on soft skills for general curriculum, while the second one is a library of 25 software-training courses. Xtreme Learning replaces all the facilitator-led training on desktop software not only in North America, but also at a global level. The decision was made because the LMS allowed the possibility of anytime access to training, consistent content, global delivery, and cost savings. However, even in this case, because a blended approach is seen as more effective, the IT department offers supplements to web-based training (Lunch & Learn program).

Centra Symposium was introduced in 2000 as the company live e-learning tool, and was successfully applied to virtual facilitated synchronous sessions with groups of users at multiple locations. The object was training on a new enterprise-wide financial system (SAP). Live training was delivered to over 370 users, individual or small numbers of finance experts, in 65 locations in Asia and Europe.

Another program that uses blended deployment strategies is a comprehensive sales curriculum called "Connecting with Customers". The project is made up of 80 modules either facilitator-led, manager-led, or self-

study. The program's objective is to create an integrated customer management approach used by the entire global Coca-Cola system. The e-learning application consists in the fact that all paper-based material is now electronically distributed on printable files. Conversion of specific modules to web-based learning is under consideration.

"Business Basics", the orientation program for new hired employees, is mainly web-based, followed by a short classroom session. It provides a good overview for new hired employees and management needing to understand the business, the company's history and organization. The web-based version allows easy access, relatively easy maintenance, and version control. The first version of the orientation program was developed on CD format.

An online information system structured around different web sites accessible in the company' intranet is also part of the learning approach. An intranet-hosted web knowledge management system, "Connection", provides sales and marketing information. This is a marketing database of static content, mainly presentations, a huge repository of information about all the company products, brands, channels, promotions, and marketing services that replaced previous binders and CD-ROMs. "Connection", which has searching capabilities, tutorials, and a technical and content help desk, is targeted at nearly 6000 users of the sales and marketing community in the United States.

Information comes in from subject matter experts, and after being checked for quality, is centrally published. The site is reachable from the "All About Me" portal as well as from the company intranet portal (Coca-Cola machine), but, because of its nature of information repository, it is not connected to the LMS.

> *We built it mainly for three reasons: consistency of information, cost reduction,and speed to market (M.R., Project manager Coca-Cola Connection, 1/29/03).*

Another important piece of this information system is TechNet, a service technician performance database that contains service calls, productivity results of technicians, who fix fountains' equipment and links them to their training and certification history. This systems help to measure performance results of each fountain technician's training, whose cost is annually very high, around $ 600 thousand for development and $ 500 thousand for implementation.

An electronic reference library, which contains an online collection of popular computer books, is offered to programmers as a web-based learning solution on software questions, techniques, tricks, and shortcuts.

The point of entrance to the LMS system is the section "my career" in the web site "All About Me". This is a web site that organizes in different sections all information that can be of interest for employees: my career, my life, my money, my health, and my workplace. It is important to talk about this site because it is a fundamental part of an integrated information strategy that links learning, training, and e-HR in one single design.

The project, which takes the point of view of employees, organized already

available information. Eight pre-existing web sites were collapsed into "All About Me" that was launched in June 2002. As D.P., Director of the HR Information Strategy, says:

> *We wanted the site to be the active voice of the company and we wanted to emphasize an active approach from employee. We gave great attention to structure and organization of information. It had to be easy to find, relevant, and accessible. Navigating the web site should not require training. But most of all, everyone had to find all information related to the same topic in the same place. For example, before there were five or six places were you had to look in order to find information about travels (medical, financial, and cultural information, procedures and authorizations, etc.). Now it is all in one place (Interview with D.P., Director HR Information Strategy, Atlanta, 1/30/ 2003).*

The web site is hooked to a portal (SAP), a software that uses the personnel database to create employees' profiles. The system allows information to specifically target different people based on that profile and, therefore, allows a great degree of personalization, efficiency, and self-sufficiency on the part of employees. Substantial previous paper work has been transferred on the site: managers of people can see all information about their staff and carry out administrative tasks, such as: move a person to another unit, start a job posting, see and review salary and benefits of their staff, and compare them with internal and external equity. There is no classroom training on how. to use the tools, but tutorials, online helps, and a physical toolbox with laminated reference cards. The next planned upgrades for this year are the possibility for people to sign-in from the Internet, a content management tool that allows worldwide distributed access to content development from experts scattered around the world, and a more sophisticated search engine. In the next two or three years, the plan is to create a central database for all the company operations in the world and one global portal to access it.

3.2.1.4 Results. For "Civil Treatment" the company calculates a $ 34 cost per participant, a $ 56 savings per day compared with the classroom version estimated at $ 90 per person per day of training. The adoption of Centra Symposium, the virtual classroom, allowed the company to meet some very tight deadlines for training on a mission critical system, and saved the company more than $ 400 thousand in travel-related expenses. "Business
Basic, the orientation program, in the past consisted of 5 days of classroom training that was run about once a month and taught approximately 15-20 people each cycle. "ThecNet", whose implementation cost is estimated around $ 1million over five years, is expected to reduce 0.5% repeated calls, which equals annual savings of $ 500 thousand. The " All About Me" web site has been very successful so far, with 1600 visits a day peaks and 1400 visit a day for online posting.

3.2.2 The HMSHost

3.2.2.1 Case-description

The Company. With its headquarters in Bethesda, Maryland, HMSHost is the American leading provider of food, beverage and retail concessions at

nearly 200 travel and entertainment venues globally. HMSHost has revenues of $1.6 billion and is a wholly owned subsidiary of the Italian group, Autogrill S.p.A. Together, HMSHost and the rest of the Autogrill Group have annual revenues over $3.0 billion. HMSHost is the U.S. concessions leader, serving travelers in 71 airports worldwide, including 18 of the 20 largest airports in terms of passenger traffic, and 97 toll road travel plazas in North America. The company, which has the franchise of internationally famous brands such as Burger King, Pizza Hut, Starbucks, and Sbarro, also has a presence in shopping mall locations and tourist attractions such as the Empire State Building, the Houston Space Center, and the New Orleans Aquarium. The company operates with a portfolio of over 100 brands, proprietary and licensed, which provides travelers with high standards of quality, and a balanced mix of international, national and local offerings. These offerings are comprised of catering services and retail sales of a wide product range such as newspapers, books and gift items, food products, clothing, and accessories. In North America, HMSHost has over 23,000 employees, primarily in airports and on toll roads.
Due to the nature of the business, the company employees and managers are spread out all over the U.S. and Canada, responding to a relatively small corporate headquarters based in Bethesda, Maryland.

3.2.2.2 Learning strategy and organization of the HR function.

To understand the current situation of the company learning system and its use of e-tools, it is important to point out that HMSHost, due to the nature of its business, has been deeply affected by the events of September 11, 2001. In fact, the airline transportation system and the airport food and retail market have been dramatically affected by this national tragedy. After September 11th, HMSHost has gone through a major company-wide reorganization. Before the reorganization, the company had a training department comprised of 12 people, part of which were field trainers, mainly focused on traditional instructor-led training. The courses were both purchased from outside consultants or developed internally, especially orientation and basic training. In the words of C.P., Senior V.P Human Resources, the situation was:

> *We trained the trainers and it was a lot of materials and a lot of classroom. Two things were going on: first we were spending a lot of money in developing this kind of training, and secondly, we had our people coming in and out of the field so often, and for so many training things that it paradoxically was a factor of lack of focus on operations, to some degree. Our location General Managers already travel a lot for a number of meetings about the industry and regulations and what is new about the Food & Beverage business, so we ended up having General Managers and key people out of the branches half of the time. There was no focus on the business. This is an extreme way to say that but…at that time the business was steadily growing so no one really paid too much attention to in efficiencies. But then, with September the 11 th everything changed*

> *(interview with C.P., HMSHost Senior V.P. Human Resources, Bethesda, MD, 2/21/2003).*

The reorganization cut back the entire HR Training Department except for one person who, hired the year before, was managing the introduction of technology-based training. The idea was to retain a key person with the task of developing an innovative and less expensive form of training, while asking the field operations to determine and develop solutions to their own training needs.

Coordinated all from a central cross functional group at the headquarters, that identified critical need areas, teams of people in the field came together to develop different trainings, such as leadership training or performance appraisal. They upgraded existing resources and created a classroom-based program for one side of the business, toll roads, that was then shared with the airport and shopping mall sides.

> *Developed by the operating branches and delivered to the branch associates, this effort is interesting because it is corporate driven but developed with field resources and it is something that they really want instead of corporate saying*
> *"we have these various things, learn them (interview with C.P., HMSHost Senior V.P. Human Resources, Bethesda, MD, 2/21/2003).*

3.2.2.3 History and characteristics of the E-project. Even though the e-project started to be introduced at HMSHost before the reorganization with CBT courses and virtual classroom, its use has become significant for the company only after the reorganization. It has been a traumatic shift of approach dictated by external, dramatic circumstances, which have forced the company to rethink its entire learning and training strategy. This is, perhaps, the reason way at HMSHost they say they do not have an e-learning project but they do have an e-HR strategy:

> *The good thing about e-learning in HMSHost is that we don't have an e-project, but we know what we want to do with it. We try certain e-learning tools on a sort of test basis, on a pilot basis. We go with something small, not expensive that does the job. You can use the same scenario with the other things we do, we try them on a small scale to see if they work, if the learning happens and you can actually design sound instruction with this particular tool, and only then we expand upon it (interview with J.R., Training Manager at HMSHost, Bethesda, MD, 2/21/2003).*

3.2.2.4 Reasons The main cause why HMSHost does not use the web more for its learning activities is that there is only one person at the company working as web developer and, therefore, his time is a scarce resource that cannot be dedicated only to training activities. There are no investments in this area planned for the immediate future.

Regarding the possibility of implementing an LMS system, the company does not want to make the large investment, and also worries about problems of interoperability that too often emerge with these kinds of platforms. Moreover, in this moment, there is no need of a centralized platform. However, they plan to implement next year a training & learning tracking system already present in the upgraded version of their **HR management software (PeopleSoft).**

3.2.2.5 Structure and tools. The company's current training strategy is comprised of a mix of tools:

- CBT.
- WBT.
- Instructor-led training and coaching with virtual classroom.
- Online knowledge databases.

The CBT program is called "Core skills" and it is a mandatory orientation courseware for new hired employees comprised of 10 CD-ROMs. The program was instructor-led before, lasted around 19 hours (2 and ½ days), and was offered almost every week. The nature of the business is highly labor-intensive and the company turnover is 25 thousand people every year for hourly and supervisor positions. Therefore the introductory course is one of the company's main training that covers employees' practices, service standards, food safety, diversity, and so on. The course was transferred onto CBT two years ago, and now lasts 8 hours, divided into modules that can be taken flexibly at every location on computers specifically set up for training.

Web-based training is internally developed (using a tool called "On Demand") & delivered in the company's intranet. It focuses mainly on technical training for system upgrades such as Peoplesoft financial and the **HR management system upgrading**. The company is also looking at off-the-shelf web-based training for common software upgrading training, such as Windows XP. The company's intranet hosts also a wide information repository on products, brands, procedures, and standards, all information that was previously owned by different functions and available only on paper.

A very significant experience at HMSHost has been the use of the virtual class. The tool in use is NetMeeting, an application included in Windows. The tool is applied to different training programs, but the main project is HR Software (LaborPro), the HR's staffing software.

To understand its fundamental impact on the business bottom line, it is important to know that labor cost represents roughly 30% of total costs in the company's low-margin, highly seasonal, and variable business. Therefore, management of labor hours, store staffing and sales forecasting are the most important factors that determine profitability on a daily basis. In 2000, the management team realized that the company's profitability was not aligned with the market's expectations and with major competitors, including the European parent company (Autogrill). There was clearly a problem of labor management (HR's) and a gap between sales forecasts and results. Since 1996, the company had adopted LaborPro, advanced software to plan labor hours. The software, which was deployed in all airport and motorway locations, was the object of intensive instructor-led training, but the results were not satisfactory. In fact, returning to their locations, many General Managers, found too difficult to use the software without further support in day-by-day operations, therefore going back to their usual forecasts on spreadsheets. In 2000, **incorrect use of LaborPro and ineffective training were identified as central problems** to the implementation of an accurate labor planning. The company's reorganization and the compelling need to improve bottom line results in a

time of difficulty, gave a new urgency to the effective use of LaborPro and its training. The following objectives were identified as fundamental:

- Design training by HR for over 60 General Managers and 600 store managers to improve their ability to manage labor productivity using LaborPro.
- Design and deliver training, coaching, after-training weekly support, and feedback on the actual use of the instrument. The goal was to follow up with trainees for many months after the training session, until their skills with the software were maximized and they felt secure applying it.
- Time was the critical issue. For three years the company had tried to properly use Labor Pro with no real success. At this point the management needed a new start. The success of a new approach was to train people in a few months, before the business peak summer.

3.2.2.6 Implementations The Company identified a person, T.B., that had succeeded in using the HR management system and decided to employ him as a trainer and a coach assigned to the headquarters. He was the LaborPro process and expertise owner. A virtual synchronous classroom tool, NetMeeting was chosen to deliver the training. The software connects 9 people with the coach and allows file sharing. One major retreat session launched the training program and communicated the new labor productivity objectives established by the company. After that, all General Managers met weekly through the virtual classroom in small groups with T.B., the LaborPro Master, who gave them feedback on their actual weekly use of the instrument and coached them to apply it more efficiently. To cover the growing number of people who had to be trained (store managers) T.B. appointed some regional labor champions, employees who, in addition to their jobs, were mentoring and reinforcing the local LaborPro users.

A similar training is planned for the introduction of a new Food Management System, which is another efficiency tool focused on food preparation and procurement. The project will follow the same successful training guidelines of LaborPro.

The company owns, but has not implemented yet, a Lotus Notes system, a collaborative workspace, that contains several different features, either synchronous or asynchronous. It is in place, but HMSHost, following a cautious strategy, first wants to identify the appropriate needs for its use.

> *We are not there yet. Again we are taking our time and looking at this particular tool instead of just open it up. The tool has a couple of technical issues we need to work out and we don't want spring something this radical on the field at this time. The e-ommunity concept is great and we have*

> *identified areas where it could work, as with senior **HR managers** in the field, but we are not convinced yet that the technology and the time it requires is something they would accept. We want to test it and see if they actually take the time and the effort to sustain it. These people are already overloaded with so many other things that to ask them to do this, is demanding (interview with J.R., Training Manager at HMSHost, Bethesda, MD, 2/21/2003).*

3.2.2.7 Results. The main benefits of "Core Skills" are approximately $ 1.6 million dollars in three years in net savings and a shortened hiring cycle from 7-10 days to 2.5-4 days. Moreover, the instructor-led training did not have any testing, while the CBT contains tests and assessments that indicate a high cognitive retention of content. The course is reinforced by trainer sessions on local policies and manger on-the-job training.

INSTRUCTOR-LED	**CBT PROCESS**
18.75 hrs (2 ½ days)	8/10 hrs
Offered 1x-2x week or 1xevery two Weeks	Flexible 24/7
Hiring Cycle 7-10 days	Hiring Cycle 2.5-4 days
Higher % " No shows"	Lower % " No shows"
Content dependent upon instructors	Content delivered is consistent every day with every associate
No testing	Tests that indicate high retention

Table: source: HMSHost

The LaborPro training program has been very successful. Of course, travel cost savings are important, and the company estimates them at roughly $ 50 thousand, but the real impact of the program can be seen on the company's results.

HMSHost LABOR PRODUCTIVITY DATA	**2001**	**2002**
SALES in million $	1451	1533
DIRECT LABOR COST	24.6%	23.9%
FULL TIME EQUIVALENT EMPLOYEES	17.651	17.717
IMPACT ON THE BOTTOM LINE in million $	-	+ 11.2
PRODUCTIVITY	3.1%	+5-7%

Table: source HMSHost Company

As the data show, in 2002 the company had an increase in sales of $ 82 million with roughly the same number of full-time equivalent employees. This is a significant improvement in the company's labor planning. Moreover, the improvement of 0.7% in direct labor cost (the cost of the labor directly connected to sales) is an impact of $ 11.2 million profit on the company's bottom line in a year that has seen a 5.2% slowdown in passenger traffic at operated airports. These results were surely reached

because of an optimal use of LaborPro due to the new training and coaching strategy through virtual classroom.

Chapter 4: Analysis

4.1 Analysis of Cases

4.1.1 Coca-Cola

Looking at the Coca Cola's experience, it appears that e-learning is not a self-standing project but a part of the evolution of the company learning strategy. There is no special emphasis on the effort to introduce technology in the learning experience as something that stands out alone. In fact, available learning options are classified not on the basis of the technology they use, but whether they are self-paced or collective in nature. The technological tools that the company has developed are principally those, which many companies are using, nothing extraordinary or advanced, and classroom training and the like methods have still a strong, central role in the learning strategy. What is important, though, is the level of integration of training initiatives and information systems strategy in general, and their deployment constantly pursued from the employees' perspective.

The HR Information Systems Strategy, in the organization this in fact, is much more than a technical group that applies e-learning tools and initiatives to the training department's design of learning. The group gives the HR information architecture, of which training and learning are parts, a unique coherence, and a clear direction for future development. This allows investments in technology to be focused, well considered, and not driven only by previous investments.

The "Jill's story" is a very powerful instrument that uses storytelling techniques to reflects not only a technical but also a cultural shift of the company toward a proactive role of employees in promoting their self-development. The "All about Me" web site is very consistent with strategy and attractive, but mostly, its success is due to the added value it offers to people working at The Coca- Cola Company.

The fact that the LMS system has been established for a reason other than an e-learning project and that an ASP (Application Service Provider) hosts it, decreases the upfront investment and makes most of the costs variable. This fact makes the emphasis shift from e-learning to the system's registration and tracking functions for all the training, so the emphasize is certainly less on web-based training and more on building course awareness, access, registration, and reporting capabilities. This puts less pressure on the development of a course library to fill up the LMS and justify its purchase,.

It is also noteworthy that what started as a constraint externally imposed on the company (the suit settlement), has been turned into an opportunity. In fact, the implementation of the LMS functions was a pivotal instrument for starting a larger application of technological solutions to training and learning.

A process of centralization of the company's training activities had already started at the time the LMS was established, but it reinforced it. As K.H. says:

The LMS played the role of a unifying factor without us having to change the organization. Its introduction helped to standardize and centralize training that was done in different organizations within The Coca-Cola Company (D.P., Director HR Information Strategy, and Atlanta, 1/30 / 2003).

The strategy at Coca-Cola is connected to the business and driven by its needs. The blended mix of learning approaches, of which technology solutions is a part, is strongly aligned with needs dictated from the operational field; so e-learning tools are adopted only when they are considered the best solution to a business need.
HR aligned courses as "Civil treatment"(the compliance course delivered as part of the discrimination suit settlement, and the orientation courses) for new hired people are actually the only. Self-paced web-based courses with a significant completion rate. At the case studies moment, registration for soft skills e-learning courses is virtually absent. The library is not yet a part of a blended mix and, at the moment, it stands alone waiting for application.
But Knowledge Management initiatives, such as web-based information repositories, digitized paper presentation, and printable files, are pretty successful and coordinated with training initiatives in a way that makes them clearly a part of the same learning strategy. The logic has been to transfer on the web as much useful information as possible which needed frequent update. Thus leading to help of HR information system and training departments.
However of the near 240 courses catalogued on the LMS system, less than 10% are e-Training courses (not considering the recently libraries), revealing that classroom training is still a centerpiece of the learning strategy. Decisions on how to develop a learning initiative depend on a number of criteria such as: number of participants, location, content, cost, and expertise, maintenance, and security. As summed up: When a decision on how to develop training has to be made, in addition to the cited criteria, consider this*:*
when a major cultural change is involved, when interacting is central we choose classroom. Training about tools (SAP, Marketing tools etc) even if instructor-led is best suited by technology, especially by virtual classroom (K.H., Director Global Learning & Development, Atlanta, 1/29/ 2003).

4.1.2 The HMSHost

The HMSHost case study is significant because it shows an uncommon approach to the application of technology to **HR practices and initiating learning**. The dramatic events of September 2002 have marked an impressive shift in the company's overall strategy that, in turn, has profoundly influenced the approach to learning.
Strategic Shift The bottom-up, gradual approach adopted, is very coherent with the company's culture, lifecycle moment, and business environment. HMSHost, in fact, operates in a low-margin, labor-intensive business. The reorganization has been the opportunity to refocus what had become a self-feeding training department and to transform it into a much leaner and efficient structure. In fact, both the centrally coordinated, classroom-based training managed by the branches, and the technology-focused activities – especially CBT and virtual classroom – have satisfactory result of continuing vital learning activities, while reducing their cost and structure. The company is aware that this is a temporary response to a critical situation, but it also stresses that this approach seems to have a positive impact on the bottom line Evident from the VP HR's comments:

> *The fact is that we are doing much better as a company at the bottom line because now there is more focus on the business. We do what is necessary to keep the business going,. In addition, it seems to work pretty well. We are not fashionable as other companies are, but we are doing pretty well. We are finally coherent with what we are and our business is. In the short term you can do what we did with training and have good results, but we are conscious of the fact that, in the long term, we have to fill the gaps that we have in developing people. We have gone from one extreme to another, but circumstances required it. We will have to develop things at a certain point. However, people today talk about numbers and business much more than they did years ago, and this is good*
> *(HMSHost Senior V.P. Human Resources, Bethesda, MD, 2/21/2003).*

HR and Technology are of particular interest in this regard especially with respect to the experiences with CBT and NetMeeting. Both have a real impact on the way the company conducts vital parts of the business. Due to the **extremely high turnover rate** (almost 100% annually, common in this business), the introduction of **technology-based training** instead of local trainers that are face-to-face, results in a significant improvement not only of the **retention rate**, but also of the **hiring cycle**. The CBT orientation program allows the company, that relies on a huge population of employees in low level jobs that constantly changes, to leverage the most important advantages of technology-based training:

- Consistency of content delivery.
- Flexibility of training delivery.
- Reduction of costs (travel hiring etc).
- Tests and assessments included in the internal design.
- Enhanced productivity and efficiency.

Training: The experience on the training and coaching program through a virtual classroom, has not only been extremely successful, but has emerged as the most effective solution to the problem of training overall, and dispersed management group use the tool consistently in a short time. In fact, as demonstrated by several years of unsuccessful traditional training on the same software, only the e-learning solution offers, at the same time, different advantages such as:

- Consistency of training delivery to a geographically spread target group.
- Continuously reinforcement and follow up of the initial training with coaching sessions.
- Powerful social interaction with other people and the coach while working from different locations.
- Fast and compressed execution time that reduces the innovation introduction time.

Therefore we can say that the successful application of the HR management software depended upon the adoption of a specific training model: a virtual classroom tool and a dedicated person responsible for training and coaching delivery. In fact, this model assures continuity to the learning process, and allows developing it into organizational learning. The weekly follow up, coaching, and feedback sessions allow managers to share problems, solutions, and learning. These sessions are even more important than the

initial training, because they are centered on real situations that happened during the week and, therefore, are a moment of sharing between users and an integral part of the organizational learning process. This can, at the same time, lower contact costs and enhance information and data circulation in a controlled environment. Another important point is that this approach is a mix of training and coaching and it requires a mix of centralized and decentralized resources. The headquarters is "central" by definition, even tough, due to technology, it is only a virtual centrality, while the regional champions are people form the locations, in direct contact with trainees. They reinforce the organization daily by being visible and helping to figure out new solutions.

The decentralized structure of the company and the attitude toward inexpensive bottom-up solutions, which built on its actual success, are the main reasons that deter the company from investing in an learning management system. The lack of need for a central tracking system and the absence of a multi-phase e-learning plan make this kind of investment nonessential.

The company doesn't have a corporate reporting system over and above, they have a manual location per location tracking, but no centralized control. The responsibility of tracking training is of the location.

> *The only one training program we were responsible for tracking was part of a litigation and that was CBT and classroom and we kept very accurate records of that at the corporate level, but only once (C.P., HMSHost Senior V.P. Human Resources,*
> *Bethesda, MD, 2/21/2003).*

But in no way does this means lack of strategy. On the contrary, it seems that the learning strategy of the company is clearer and more focused now than it was at the time of the previous, traditional Training department, and that e-learning has a specific and important role in it.

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*E-learning is defined by the company as "a broad set of applications and processes that allow an individual to acquire knowledge and develop new skills through computer-based technology using an internet browser" (company's e-learning brochure). Nevertheless, the e-learning project are not meant to completely replace traditional classroom training, but to complement and supplement it. Thus allowing the company to expand its training offer and to quickly train more employees at various locations, and employees are able to access an alternate means of learning for professional development. **(A M.A., the Instructional Design Manager at Horizon BCBSNJ University, Newark, 1/16/2003).**

Please refer to Appendixes A B and D for more information

4.2 Analysis

The case tries answering the general research questions:

How are corporations really managing the inclusion of e-learning in their strategies?
How does technology enable their learning?
How does a labor and human resources department play a role in the strategic review?
How can organizations develop a learning culture to become a modern learning organization?

E-learning is not simply a different training delivery media, but a new factor in firms' strategies. My analysis of the case demonstrates how companies are trying to make e-learning operational within their learning strategies, and to pursue a blended solution where e-learning is considered a substantial part (HR and Finance are other parts), not only an additional delivery media. The role of face-to face training has been reconsidered and redesigned not necessarily diminished in the light of e-learning. On-the job activities are reinforced through the daily use of the Information enabling technologies (Internet, and information access and distribution).
Repositories have been integrated into a general view of learning sources, sometimes even replacing training. It is also clear that e-learning cannot be successfully sustained if it is not a part of a coherent vision. The adoption of technology alone is not a sufficient prediction of success for a learning organization strategy if it is not connected with the company's:

- culture,
- strategy,
- and orientation

The ways in which the analyzed companies deal with the introduction of technology-based training and HR enabled tools, show some common lessons and trends that can be summarized as :

a) Consolidating HR Functions i.e. a convergence of different training and knowledge management tools under the common label of e-learning. However, this label is likely to make the term e-learning more a barrier than a help to the development of a seamless strategy to learning. The future should only be learning.
b) A different degree of success of the e-learning initiatives depending upon their integration and coherence with other learning channels, organizational culture, strategy, technology proficiency and importantly HR functionality
c) Organizational learning achieved through consistently developed technology as well as web based learning activities.
d) A high degree of influence of the initial choice in terms of technology on subsequent developments, especially when a high upfront investment is made. There are also network effects at work at the company's level especially with respect to processes.

e) A changing balance of centralization and decentralization of HR functions in relation to the adoption of different e-solutions and organization of training functions.

In the following pages I will explore these trends in greater detail:

E-learning as a label The first consideration drawn from the analysis of the case studies may seem a mere definition problem, but it affects the ability to analyze and choose among various technology-based solutions. What goes under the broad label of e-bases activities is a mix of very different tools and approaches that can be hardly defined by a single term. The term e-learning has been useful to identify a range of activities sustained by web-based (Inter and Intra net) solutions in a time when these tools and activities were new to the most part of the HR practitioners. Now, the acceptance of technology as a viable learning and training modality is widespread, and the label information systems based learning is too vague to allow a fine-tuned analysis of its different components. As the case studies suggest, a mix of multiple solutions and components, all different in their characteristics and possibilities, go under the same label creating the impression of homogeneity where there is none. Different HR tools, such as self-paced web courses or virtual classroom, have completely dissimilar impacts and levels of success when applied to different learning needs inside the same or different organizations.

The e or IS label seems confusing if we consider that companies do not view learning and e-based learning strategies as separated anymore, but consider technology-based solutions as an integral part of their general learning sources.

The analysis reports that solutions are best suited to achieve specific goals in relation to a clear **training need** of the company, and in coherence with other learning channels. There is no single recipe that fits all problems in dissimilar contexts.

For example, the use of a virtual classroom for what appears as a similar purpose i.e. training on new system software at Coca-Cola and at HMSHost has resulted in hugely different consequences: for the first company the advantage has been **savings in travel costs**, while for the second one the real achievement resides in the impressive impact of this training model, on the bottom line operating results. Another example is the use of CBT (Computer Based Training) or WBT (web-based training) for orientation training of new-hired employees. In both cases, the **orientation time is shortened** and the cost of one or more trainers is saved. At HMSHost it is general introduction to the company's history, procedures and organization, while it is a vital instrument of basic training essential for the employee to start, in few sessions, performing the assigned job. It all depends on the nature and the size of the training need more than on the specific, applied technology. For these reasons it is useful the way Coca- Cola divides training and learning solutions on the basis of their level of interactivity (self-paced or group-based) instead of the technology they use (web or classroom). This has the advantage of focusing on the process of learning more than on the technology that sustains it, therefore avoiding the trap of technological decisiveness.

Another trend that clearly resulted from the case studies is the **development of databases & information repositories**. On the domain of specific knowledge management projects, they are increasingly common and seamlessly integrated in the organizational learning architecture. Both the companies seemed to have managed transfer of a great deal of information about products, brands, procedures, processes, and other matters into a data base where its function differs depending upon the importance of information retrieval in a user's routine. As the information repository called OLI is a structural part of the daily job of claim processors, and it is designed as a support system to help employees find the information they constantly need to perform their jobs. At HMSHost the company intranet site hosts all the information about brands, products, procedures and employee information that were previously distributed to store and general managers in the form of paper-based manuals. At Coca-Cola, the intranet web site "Connection" is a daily instrument of work for over 6000 sales and marketing users looking for products characteristics, brands, channels, promotions, and marketing services.
In each company, these databases replaced previous paper based tools and instruction programs. They are now integrated into the learning architecture and allow easy access and daily use of explicit knowledge for a specific group of users. These are information management tools because they help people needing not to know everything, but to find what they need to know and use it effectively. They are extremely powerful tools that combine learning and work performance, therefore enhancing the value of the combination and reducing the demand for formalized training. Thus helping HR function in its transactional tasks to the fullest is the direct and significant advantage. Therefore the databases when coupled with networking technologies, (knowledge databases) help to sustain the communities of practice (training , development etc) that created them . In fact, these kinds of knowledge bases are the fruit of, and integrated into, the work of a community of practice: claim processors at Horizon, HR, marketing and sales people at Coca-Cola, concept developers and General Managers at HMSHost. This is precisely the reason why they work. Technology helps to make these knowledge repositories easier to use and faster, but it is not the main reason of their success. This reason, instead, resides in their value for the functions that put them together.
Most companies have expressed the intention of supporting these learning activities as a further step in their **learning strategy**, but this claim seems more theoretical, at this moment. In fact, in none of them show any indication of a clear recognition of, or of any activity already in place to sustain, these practice. Thus

> Without recognition of their value and a clear commitment to cultivate a culture of such practice on a larger basis, the adoption of technology alone is not going to achieve the result. (Wenger, McDermott, Snyder, 2002)

In conclusion, the use of the Information systems e-systems, e-learning hides very different ways of developing blended strategies to learning and modernization. The emphasis of technology over learning needs and different, possible solutions, concealing what, in reality, is a diverse set of

successful and unsuccessful experiences. Perhaps, now that the value of using the communication modes (internet, intranet etc) for learning activities has been established, it is time to call it simply learning.

Different factors influence the success: In real sense to determine the impact on HRM & of technological choice look at the case studies together, we can distinguish a different level of success of the learning initiatives depending upon their integration and coherence with other learning channels, organizational processes, Role of HR, culture, and the company's strategy. From the analysis, we cannot say that the adoption of e-strategies is successful in itself. Only that adoption of solutions based on technology leads to positive results when they are in a coherent relationship to a number of other factors inside the organization.

Role and flexibility of HR, the level of technological expertise, and the company's culture, organization, and incentive system. Bad scenario is observable in the case of Horizon *. This case is exemplary in this respect. The company decision to buy a Training Management System and to implement an e-learning project has been a fundamental part of its strategic change of the learning, training architecture. The company looked at e solutions such as, e-learning as a tool that could push a cultural shift toward the learning organization. This is a deterministic point of view on the power of technology. In doing so, Horizon has invested money and energy in a learning solution that is only partially coherent with its organization. While the electronic repository (OLI), which works as a support system, is surely in line with the daily information needs of claim processors*[A].

However, the planned transfer on the web of most of the training for customer service and claim processing employees is in contradiction with contractual **job rules, performance measurement, incentive system based on productivity** (HR functions), average level of technological proficiency, and organizational structure of authority and supervision. Moreover, of all the instruments, self-paced courses are among those with no interactivity and no social interaction at all, a fact that makes them even more difficult to accept to different target groups. The whole e-based training, development and learning culture construction is

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* Case of Horizon BCBSNJ see appendix A

*[A]It is not by accident that the content of the system comes from the claim processor's community and that the system was built independently by this community of practice and only lately connected to the **LMS** (Learning Management System**)

**The LMS supports web based learning, self-registration, and training management. It also provides consistent data collection and reporting. The purpose of the LMS is to provide an integrated, central framework of classroom and non-classroom learning solutions that delivers training to users in different locations, and provides instantaneous tracking and assessment of employees from a central location.

internally coherent, but the results are at odds with the audience and with the company' culture. Consequently, the company is struggling to reduce the divergence between its strategy and people's acceptance of the system relying on hierarchy. The company, as a way to encourage employees to take the online courses, asks HR and mangers to look at them as a means to close gaps in performances.
Now look at the Coca-Cola case study, the use of technology is considered a possible learning solution based on its specific characteristics. The company introduction of internet-based solutions to learning needs appears to be consistent with the already high level of technological development of the company, with its focus on business requirements as drivers of learning and development, and with a still strong classroom-based training offer. Moreover, the level of integration of training programs and human resource information (HRIS) strategy is guaranteed by a dedicated organizational structure. With focused process integration and support of HR in the move form paper to digital office. (Information Strategy), allows a solid vision of the role of the Internet in the development of training and learning initiatives without overstating it.

All the same, choosing information systems one of the pinnacle is to make distinctions among different tools. While information repositories, virtual classrooms, and orientation programs are successful, till now the library of self-paced soft skills courses is not very successful. Once again, as in Horizon, only compliance courses seem to drive this e- component. When a large audience has to be trained or instructed on a mandatory program in a short period of time, this seems to be the optimal solution, while in other cases, the privacy and monotony of most self-paced courses have no appeal to people, especially if the idea is to take them at home, in after-work hours.
At HMSHost, the adoption of e-training has been very cautious and slow, but the use of selected web-based tools and CBT has proved to be extremely in line with the goals and of the organization. In addition, some alignment of information tools with processes & functions is evident.
It is also important to highlight other factors that influence a successful learning strategy & a broader goal of learning culture. In particular, in many situations there is a specific event, a turning point that triggers the shift toward a new vision of learning integrated with technology: at HMSHost it was the crisis of the September the 11th; at Coca-Cola the settlement of a discrimination suit that forced the implementation of a LMS; at Horizon the reorganization and new role of the HR's training department.

The structure, credibility, and strength of the HR department are factors of particular influence. As seen at HMSHost, the actual dismissal of the entire training department revealed how much its tendency to justify and perpetuate its role had become, a barrier to a more focused learning strategy. At both Coca-Cola and Horizon, the training department had undergone a strategic reorganization just before the beginning of the e-project, centralizing dispersed activities, designing roles and goals closer to the business drivers, and questioning e supremacy and the efficiency of the traditional training & development methodologies.

Finally, an important factor in determining a successful adoption of web-based tools is the stage of development and maturity reached by the organization regarding technology-based initiatives. It appears that where part or irregular experiences are experimented across the organization in an early stage, as in Coca-Cola, it is easier for the HR department to collect them later and establish policy and infrastructure. In this case, the acceptance by the targeted audience has better chances to succeed. At HMSHost experimentation and gradual development of e-learning tools only on the basis of actual, positive achievements has been adopted as the company's strategy. The top-down approach assumed by Horizon, with the systematic deployment of a comprehensive, predetermined model, leaves no room to experimentation and makes it more difficult to be easily introduced as well as manipulated to requirements by the people.

Organizational learning derived from e-adoption When consistently developed, e-based tools & activities can help in achieving organizational learning culture. In two case studies, the use of e-learning has resulted in a form of learning that goes beyond individuals and reaches the enterprise level. *Organizational learning occurs when the sum of learning at the individual level is greater than its parts. It leads to shared mental models which become embedded in the practice and culture of the organization members (Argyris , Schon, 1996)*. Of course, **HR & training** alone is unlikely to produce such learning, but when it is backed by **organizational systems such as control, incentive, processes, performance management and value systems**, it can effectively change the enterprise focus and move to a collective level of achievement.

AT HMSHost the LaborPro training program, using virtual classroom sessions, was linked to a reporting and control system on productivity, which, together, made HR people and line managers shift their focus to labor cost reduction. The virtual classroom act as, part of a control infrastructure, aligning the individual learning with a broader organizational goal. It is noticeable that the specific capability of the virtual classroom to shorten and compress execution time - together with a coherent control and incentive system -has been a crucial factor in transforming individual learning into an embedded routine. Its evidence is the fact that, with the traditional training, the same development had previously failed within the company. The project has helped to transform explicit organizational knowledge into a tacit shared model of action among company managers.

At Coca-Cola, the construction of the "All about me" intranet site, responds to a broader goal than the simple organization of dispersed information. The portal is the first step of a larger information strategy whose goal is to **shift focus from the Human Resources department managing people to employees and managers taking a proactive role**. The structure and all its content, is designed from the employee perspective. Its design and software capabilities a portal software that profiles and tracks each user's preferences and needs and links to the HR database are parts of a cultural shift promoted by the HR department.

Through the site, the **Human Resources** department remakes and actively shifts part of the responsibility traditionally attributed to it to managers and individuals. On the one hand, it promotes proactive individuals that take part

in their own development and assume responsibility for their jobs and careers. It also emphasizes that managers are directly responsible for their staff's **development** and achievements. These values are incorporated into the design of the portal, instead of being merely declared as a statement of a new mission. At Horizon, the structure of the e-project is not suited to create an organizational change or learning, even if, paradoxically, this is exactly what it was expected to achieve, because no other organizational levers, such as incentive and reward system, & relationship with Unions, have been aligned with it.

Networks at work The case studies do not report any situations that predetermined or forced a specific technological choice. Now it is evident that the final selection was not the only possible choice that could have been done.

The **current organizational model, culture, role of HR,** along with other departments are all factors that deeply influenced the way technology was deployed. Once the choice was made, it had a high degree of influence on subsequent developments. As noted, web based tools have an economic characteristic that is not secondary in determining its deployment and development.

The cases offer a useful example of different technological choices and their consequences from the most rigid to the most flexible. Horizon - Learning & Training Management System, Coca-Cola uses an Application Service Provider (ASP) to host its own, and HMSHost has no central system.

Characteristics of networks can be adapted to information systems learning. The value of large networks to users is quite evident when we consider virtual classrooms, e-communities, wide area networks with central HR or company intranet web sites. In fact, only if a sufficient number of users are connected to the system and actually use it, is there a positive scale effect, a direct network effect. A critical mass of users makes these tools valuable, while if the number of users is small, they do not constitute a real alternative to other, more traditional training and communication means.

This value becomes higher on average to each user as the network grows larger, because it facilitates the exchange of the same knowledge, communication and information within the company and encourages the use of the networking technologies as an exchange place with numerous information sources and different individual contributions. This networking effect is particularly clear at HMSHost in the LaborPro training. Critically only if the majority of line Managers participate in virtual classroom sessions, this learning tool can become the company standard **helping H**R and achieve the expected results in terms of deployment schedule and learning. The same can be said for the "All about me" web site at Coca-Cola Only if is there a critical mass of employees connecting there is significance in maintaining it, and the site can actively promote a new set of values regarding HR management. At Horizon, no critical mass has been reached so far and, therefore, there is no visible network effect.

Self-paced course libraries should exhibit a sort of indirect network effect, because a large network of users should increase the variety of the offer of applications and services available. In none of the case studies are these effects present. The only time a course reached a considerable critical mass

was when it was mandatory, therefore having actually the opposite effect of restricting the possible choice. Self-paced courses could be better applied in connection with more stimulating activities, as a part of a bigger scheme, as alone, they do not seem to trigger any networking.

Management's Role The main factor that conditions the e-learning cost structure is the presence of a Management System aiding in learning. From the beginning, vendors unanimously promote this kind of platform as the only way to structure a successful e-project, so companies such as Horizon decided buy one. The estimated cost of buying an LMS varies from $ 300 thousand to $ 500 thousand. Therefore, the upfront investment is both significant and paid in advance. The result is an e-learning configuration with a cost structure dominated by high fixed and sunk costs. As a result, a significant number of active users are required to pay off the initial installation. At Horizon, the initial investment in the LMS and the consequent **financial and human costs of reorganizing the HR's training** department and sponsoring the entire project have not started to be repaid by a sufficient number of users. Moreover, because of this upfront investment, the company is compelled to continue with the initial plan of expanding the system (buying libraries of courses, designing learning labs as second steps after a self-paced course, adding new features to the LMS), to sustain and justify the initial decision. At this point, the preliminary investment constitutes a barrier to exit that makes switching costs of a change in the learning strategy too high for the company to manage.

Such systems, also, makes the need for standards even more pressing and important for companies like Horizon than for others. All the parts of the system have to be connected to the MIS platform. As a result, interoperability and compatibility between different vendors' products become vital. It is not by accident that problems in this area have caused the projects to be delayed for several months both at Horizon and at Coca-Cola. Unfortunately, standards do not yet offer any guarantee to work seamlessly.

The decision of Coca-Cola to install an LMS hosted by an Application Service Provider (ASP) reduces in part the rigidity of the choice by diminishing switching costs in the event of failure of the project. In fact, opting for a hosted system, the company turns into variable costs the bulk of the fixed, upfront costs of buying the platform, even if an initial investment was required to customize it. Moreover, the fact that the discrimination case settlement provided the HR with a strong motivation for acquiring the system other than the launch of an e-learning program further lowers its potential barrier to exit. The ASP solution is certainly more flexible, while the presence of an LMS still is a factor that requires the company to work with a central plan and to worry about standards.

Where a central technological platform is not present, as at HMSHost, the economic dynamic of e-project changes. The model adopted here is made up of different initiatives supported by a central **coordination role, the training Manager of HR**. With no upfront investment, this approach reduces the risks of lock-in and lowers switching costs at the level of single tools. This solution is more flexible but, being less systematic, carries the risk of missing potential areas of useful e-learning applications for lack of human and financial resources.

HR's Training & Development Activities

As noted in the technology section different technological choices, coupled with the **organizational structure and orientation of the HR's training function**, determine a varying, dissimilar balance of centralization and decentralization of learning systems. The centralizing role of the training function can, in fact, be reinforced by a central e-learning platform that favors a position of control, while its absence is not necessarily a sign of decentralization, but surely makes it harder to supervise individual learning.

At Horizon*, the already strongly centralized HR function levers on the Learning Management System as an umbrella for all the learning activities (see table in appendix A-- Table A2) including the information repository (OLI). It covers **curriculum management, use/progress tracking, and proficiency scores for competency mapping and career development**. The system helps the training function to play the gatekeeper's role.

Control over employee usage and proficiency in training is centrally managed. **Through the system, HR controls core competences, performance assessment system, training and development**, and, only in a second moment, shares it with managers.

At Coca-Cola, the MS played the role of a unifying factor without a major change in the organization. Its introduction helped to standardize and centralize training that was done in different organizations within Coca-Cola. Differently from the previous case though, the system is here included into the larger portal software, making it only a part of a broader **e-HR** information scheme. This means that the infrastructure helps shifting responsibility for employees training and development from HR to managers and individuals as much as possible.

At HMSHost, the HR's Training Manager and the central cross functional group for training, coordinate a series of activities that are developed and delivered by different. Players: managers in the branches, tools experts (such as the LaborPro champion), the Training Manager himself & central HR. There is a central coordination but no central control of training completion rates or results. Direct management of people is delegated to managers in the locations, while the headquarters establishes the common policy. Where there is no LMS, initiatives are certainly more scattered and loose, but also more focused on specific needs.

The lesson is that the technological choice does not pre-determine the level of centralization or decentralization of the learning architecture. It can, however, coherently be used to reinforce one tendency or the other. Finally a few of more points worth notice regarding technology and new age Information systems.

First, when technology is involved, unsuccessful initiatives are more visible. With classroom training, fruitful involvement was, in some ways, hidden by physical presence and group dynamics of participants. With e-based systems, individual participation and involvement are conditions of success.

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* See Appendix A

Their absence cannot be concealed. Therefore, before turning their attention to technology, designers should concentrate on assessing the needs and determining their coherence with a specific technological solution. Also the way processes work in the organization should be given extreme importance.

Second, unlike companies selling technology such as Cisco Systems or IBM, there is no developed use of e learning as a way to share internal training and knowledge within the organization, partners and customers in the value chain. The general trend in many industries is to take advantage of the Internet/intranet to connect every potential partner or user to internal sources of knowledge and information about people & products, because knowledgeable customers and partners are better ones but the best ones are knowledgeable employees. Only Coca-Cola two web sites were built to expressly share information with external partners: "Connection", which is targeted at nearly 6000 users of the sales and marketing community in the United States, and "TechNet", a service-technician performance database which contains service calls productivity results of technicians who fix fountain equipment. At Horizon, the training department expressed the idea of a possible, future sharing of the electronic courses library with partners. Even if this trend is not present yet in the companies in the study, it is probable that, with e-learning tools consolidating their roles, this step will be the next.

Chapter 5: Concluding Remarks

We are living in a rapidly changing world, the forces lying behind globalization of economic activities -namely economic reforms, information technologies and competition- are shaping the economic landscape worldwide. Equally important, although these forces act in a separate manner, they influence each other and, reinforce further changes in the world economy. In other words, economic reforms and breakthroughs in IT influence the nature of competition, which may trigger further economic reforms, better technologies, increased competition, etc. and so on.
Multinational Corporations are now one of the main protagonists in globalization, having spread their operations all over the world in the search for comparative and locational competitive advantages.

MNCs are increasingly enhancing the influence of globalization drivers the world over. For instance, by forming Global Production Networks (GPNs) Multi-National Corporations have conformed a series of hierarchical networks where the involved companies have access to a pool of different assets in the network. It is precisely through these networks that knowledge and technology are transferred from the higher-tier companies- usually located in developed countries- to lower-end local suppliers, located in other countries.

Globalization has also greatly enhanced and strengthened the relation between the world economy and Information technologies. Thus, economic activities and information technologies are becoming increasing linked. IT is especially suited for the inter-connecting economic activities. This interconnection greatly enhances the co-ordination of economic operations and logistics. In addition information technology is valuable for networking purposes, which enhances both inter-firm and intra-firm collaboration Moreover. IT has become essential to economic performance, given the productivity and efficiency gains that may be achieved. A reduction in transaction costs results from improved coordination, cheaper information processing, and transmission, better management of routine transactions, More efficient functions of analyzing decision making, plus other policy & strategic activities of management and functions, and IT integration with logistical innovations.

Groupware, intranets, e- mail, expertise location, videoconferencing, VPN, VRP, on- line discussion and newsgroup applications, are essential knowledge management systems that support knowledge creation. Lotus Notes, is an example of groupware that enables geographically dispersed individuals to conduct meetings, listen to presentations, have online discussions and exchange documents. It promotes socialization, communication, information disbursement and externalization, thus knowledge creation, by providing a synthetic forum where organizational stake holders can express individual beliefs, share experiences and form shared mental models. Intranets enable exposure to greater amounts of on-line organizational information, both horizontally and vertically, than previously had been the case. As the level of information exposure increases, the internalization of knowledge creation, wherein individuals make observations and interpretations that result in new individual tacit knowledge, increase. Processes changes such as Workflow automation

systems and rule-based expert systems are examples of IT applications that "reduce the need for communication and coordination and enable more efficient use of organizational routines through timely and automatic routing of work-related documents, information, rules, and activities.
However any consideration of the role of knowledge management systems must begin with the human element involved in knowledge management processes as

"The difficulty in most knowledge management effort lies in changing organizational culture and people's work habits. It lies in getting people to take the time to articulate and share the really good stuff. If a group of people don't already share knowledge, don't already have plenty of contact, don't already understand what insights and information will be useful to each other, information technology is not likely to create it Here operations like peoples department can help a great deal. However, most leaning efforts treat these cultural issues as secondary, implementation issues. They typically focus on information systems–identifying what information to capture, constructing taxonomies for organizing information, determining access, and so on. (103-17) (Donahue; Jackson 406; Malhotra 11; McDermott 103-17; Walsham 609)"

The organizations must create a set of roles and skills to do the work of capturing, distributing and using knowledge if knowledge management is to thrive & the goal of a learning organization is to be achieved. One such role is the knowledge manager some one form the HR department fits this role effectively in every way one looks at it. Person could be required to focus explicitly on knowledge creation, distribution and application in addition to typical management functions such as developing objectives, assembling and managing teams, determining and managing customer expectations, monitoring budgets and schedules and identifying and resolving problems. Another role is the Chief Knowledge Officer (CKO), a senior manager role responsible for building a knowledge culture, knowledge management infrastructure and making knowledge management initiatives pay off economically.

HRM This is where the **Role of HRM people** comes in as we have seen in the Examples of coca-cola, HMS Host Inc. HR people serve as *the* crucial bridge between front- line employees immersed in the day-to-day details of particular technologies, products or markets and senior managers driven by grand concepts and visionary ideals. Managers mediate between the "what should be" mindset of top managers and the "what is" mindset of front- line employees by converting the tacit knowledge of both groups into explicit knowledge (i.e., externalization) and incorporating it into new technologies, products or systems. Successful firms explicitly define and reward new roles that facilitate knowledge capture, refinement, retrieval, interpretation and use. The most important role is that of the HR subject matter expert. The subject matter expert acts as both an editor by assuring the quality of content, and as a knowledge repository manager by assuring the quality of context through thoughtful abstracting and indexing. The subject matter expert role is largely a response to the complex nature of knowledge repositories.

Beyond organizational structure and roles, "effective knowledge creation, sharing, and leveraging requires an organizational climate, measurement tools and reward system that values and encourages

cooperation, trust, learning, and innovation and provides incentives for engaging in those knowledge-based roles, activities, and processes" In addition to formal reward and incentive systems, an organization's culture characterized by values and belief systems plays a vital role in knowledge management initiatives.

Failures in implementing knowledge management systems are often blamed on the organization's culture; or, more specifically, it is argued that people were unwilling to share their ideas or take the time to document their insights. Organizational culture is hard to change and rarely yields to efforts to change it by manipulation of rewards, policies, or organizational structure. Instead of trying to change existing organizational cultures, the organizations could encourage the formation of communities of practice where knowledge sharing is naturally valued.

An organization's HR function responsible with structure and culture can both enhance and detract from effective knowledge management. Self-organizing communities of practice, empowered middle managers or mediators, appropriate reward systems, clearly communicated knowledge visions and collective value systems greatly support knowledge sharing. Conversely, ill-defined roles, misaligned incentive systems, unclear corporate visions and disruptive organizational politics inhibit knowledge sharing.

In short, individuals must directly experience personal benefit from sharing or making their knowledge explicit. Organizational structure and culture are vital components for actualizing knowledge management processes and technologies.

In Doing all this different HR tools, help not only by taking away the burden of HR department but also aiding it in achieving the organizational goals of knowledge / learning organization with a e-learning culture, Different ste of tools act for HR differently Kiosks, Web Portals, MIS or HRIS systems, online CV's , web based interviews take the burden of HR away form the traditional and transactional tasks (Report writing, calculating and analyzing the data manually and government agencies compliance reports etc), Plus other tools such as self-paced web courses or virtual classroom, have completely dissimilar impacts and levels of success when applied to different learning needs inside the same or different organizations especially with respect to training and HR functions training and development tasks.

Especially, considering that companies do not view learning and e-based learning strategies as separated anymore, but consider technology-based solutions as an integral part of their general sources. Therefore until now we could say by the analysis that solutions are best suited to achieve specific goals in relation to a clear training need of the company, and in connection with other learning channels.

The tools discussed above are collectively information management tools because they help people not to know everything, but to find what they need to know and to use it effectively. They are extremely powerful tools that combine learning and work performance, therefore enhancing the value of the combination and reducing the demand for formalized training. Thus helping HR function is its transactional tasks. When coupled with networking technologies, knowledge databases help to sustain the

communities of practice that created them. There are specific conditions under which human and technical intermediaries enhance knowledge reuse processes:

- Technical intermediaries are used for specific business purposes. Special focus should be to aide the human resource functions
- Organizational incentives and reward systems motivate human intermediaries to administer technical intermediaries on behalf of other users; &
- Comprehensive metadata encourages users to contribute to and utilize technical intermediaries, such as knowledge repositories, for knowledge reuse processes.

As a case; we observe that only that adoption of solutions based on technology leads to positive results when in a coherent relationship to a number of other factors inside the organization exists, as **Role and flexibility given to HR**, the level of technological expertise, and the **company's culture, organization, and incentive system**. As we see is the case in our case studies examples.

The case of Horizon is exemplary in this respect. The company decision to buy a **Training Management System** and to implement an e-project has been a fundamental part of its strategic change of the learning, training architecture. The company looked at e-learning as a tool that could **push a cultural shift** toward the **learning organization**. This is a deterministic point of view on the power of technology. In doing so, Horizon has invested money and energy in a learning solution that is only partially coherent with its organization. While the electronic repository (OLI), which works as a support system, is surely in line with the daily information needs of claim processors. However, the planned transfer on the web of most of the training for customer service and claim processing employees is in contradiction with contractual **job rules, performance measurement, incentive system based on productivity** (HR functions), average level of technological proficiency, and organizational structure of authority and supervision. Moreover, of all the instruments, self-paced courses are among those with no interactivity and no social interaction at all, a fact that makes them even more difficult to accept to a target group whose work practices have been described by ethnographic works as highly collective and social but, The whole e-based **training, development** and **learning culture** construction is internally perfectly coherent, but the results are at odds with the audience and with the company' culture. Consequently, the company is struggling to reduce the divergence between its strategy and people's acceptance of the system relying on hierarchy. The company, as a way to encourage employees to take the online courses, asks HR & mangers to look at them as a means to close gaps in performances.

At Horizon information & learning system covers **curriculum management, use/progress tracking, and proficiency scores for competency mapping and career development**. The system helps the training function to play the gatekeeper's role.

Control over employee usage and proficiency in training is centrally managed. **Through the system, HR controls core competences, performance**

assessment system, training and development, and, only in a second moment, shares it with managers.

At The Other end in Coca-Cola case study, the use of technology is considered a possible learning solution based on its specific characteristics. The company introduction of Internet-based solutions to learning needs appears to be consistent with the already high level of technological development of the company, with its focus on business requirements as drivers of learning and development, and with a still strong classroom-based training offer. Moreover, the **level of integration of training programs, and human resource information (HRIS) strategy**, guaranteed by a dedicated organizational structure. With focused **process integration** and a **support of HR** in the move form paper to digital office. (Information Strategy), allows a solid vision of the role of the Internet in the development of training and learning initiatives without overstating it.

An important factor in determining a successful adoption of web-based tools is the stage of development and maturity reached by the organization regarding technology-based initiatives. It appears that where separate or sporadic experiences are experimented across the organization in an early stage, as in Coca-Cola, it is easier for the HR department to collect them later and establish policy and infrastructure. In this case, the acceptance by the targeted audience has better chances to succeed At Coca-Cola, the construction of the "All about me" intranet site, responds to a broader goal than the simple organization of dispersed information. The portal is the first step of a larger information strategy whose goal is to **shift focus from the Human Resources department managing people to employees and managers taking a proactive role in this task**. The structure and all its content, is designed from the employee perspective. Its design and software capabilities (**portal software that profiles and tracks each user's preferences and needs and links to the HR database)** are parts of a cultural shift promoted by the HR department.

At Coca-Cola, the MS played the role of a unifying factor without a major change in the organization. Its introduction helped to standardize and centralize training that was done in different organizations within Coca-Cola Differently from the previous case though, the system is here included into the larger portal software, making it only a part of a broader e-HR information scheme. This means that the infrastructure helps shifting responsibility for employees training and development from HR to managers and individuals as much as possible.

At HMSHost, the HR's Training Manager and the central cross functional group for training, coordinate a series of activities that are developed and delivered by different. players: managers in the branches, tools experts (such as the LaborPro champion).

Through the sites, systems and technologies the **Human Resources** department remakes and actively shifts part of the responsibility traditionally attributed to it to managers and individuals. On the one hand, it promotes proactive individuals that take part in their own training and development along with assuming responsibility for their jobs and careers. It also emphasizes that managers are directly responsible for their staff's development and achievements. These values are incorporated into the

designs of the systems, instead of being merely declared as a statement of a new mission. Also by the aide of technological intermediary the organization has been striving to achieve a cultural shift to leaning culture and broadly developing themselves or striving to be learning organizations. This all is coupled with support and flexibility given to HR function, more importance given to the function in transformational roles and, building dynamic performance management and rewards systems.

> "While new information system applications are appealing, greater business benefits come from integrating service applications for managers and supervisors with workflow applications to reengineer HR processes, thus positively leveraging HR directly and organization indirectly "

5.1 : Recommendations

A short time ago, it seemed that any networking-based learning initiative (internet, intranet and WAN kind of systems) could haves an immediate success, no matter how weak its arrangement and that normal methods of classroom training , role-plays , and things like formal training sessions etc were soon to be over. However reality bites, when, after investing a great amount of money in structures and platforms, companies started to realize that successful initiatives depend less on technology and more on their careful and integrated design along with most integrated employees of the organization. That is only the beginning of an initiative of e-culture in organizations, the big glitch is the focus of financial mangers on number's and risk return tradeoffs strictly in financial terms, but for the long term success there has to be the starting of focus on users more than on cost savings.

In essence till now pure e-projects can be more expensive and less effective than traditional training & development approaches. What is undeniable is the fact that internet opens learning possibilities that were impossible only few years ago, therefore, changing the internal market of training along with pay systems , performance management initiatives and the likes. Successful training organizations recognize that a blended approach is effective due to its value addition to old training methods in many ways some of them could be:

- It helps retain people who prefer the Internet and those who prefer the classroom.
- It helps HR take new IS initiative and opens the future possibilities for different parts
- It serves learners at an over all lower cost.
- It creates synergies in promotion of training and retention of learning.
- It knowledge management and learning approaches enhance strategic initiatives for the organization in globalization era
- It promotes proactive individuals that take part in their own training and development along with assuming responsibility for their jobs

A blended approach is a user-driven model that aims to include e-learning in the learning strategy while, at the same time, reinvigorate old assets such as HR practitioners & trainers, established social networks, enhance learning organizational culture, and reputation etc. A blended solution can be seen as a manner of recombining cost and value, fast delivery and social connections in a new, effective way. Instead of turning completely away from past experiences, companies should valorize their old learning assets (Traditional HR) to create new value. To do that, value has to be seen in experience, social networks, values, beliefs, and reputation, not only in physical classrooms and successful programs. Companies with a strong tradition of learning, developmental (Schlumberger, Nike, Anderson consulting etc) initiatives can win in including e-learning in their learning structures, because they can reinforce previous experience and position in the field. Firms that already had positive

experiences in managing a composite offer, different target groups, and different learning needs, are more successful in the blended solution than those which started with e-learning from scratch. They have the ability to leverage multiple channels using the classroom to attract people online and vice-versa. The synergies created by being open to learners 24/7 in different channels can translate into more learning opportunities and higher demand.

Succeeding in building the e-Culture. The development of an e-learning initiative is new, with little data about the progress of the companies but , things like Brand, reputation, and customer intimacy are multiple advantages: a proven face-to-face experience that provides a confident learner-base is an asset difficult to create that should not be dissipated by a bad learning experience, especially online. Since e-learning is still a relatively new environment, mastering it will require an exceptional effort. From companies that want to successfully cross the frontier of e-learning toward a **blended solution**, should mind the basics.

***Develop a learning strategy*.** The simple delivery through technology and intermediaries like HRM cannot be sustained as a separate form of training, development, let alone it is expected to transform the organization. It is an appendix to the traditional instructor-led activities or, worse, a way to replace it. It has to be seen as a part of a complete learning architecture that includes a variety of tools and approaches and a **coherent learning culture**. The technology is usually the easiest part of implementing e-strategy. Its success does not only depend on the latest platform available, but on building **a strategy that optimizes the technology** within the organizational **culture, processes** is owned by the employees, and harmonizes it with other, already experimented **HR & learning channels.** To be effective, e-learning requires an integrated learning strategy and a clear vision of its role into a larger, multi channel learning experience.

Take a learner-driven approach. E-HR along with its integrated software's should not be regarded only as a way to save costs, but as a way to enhance the development and to take advantage of connecting capabilities. **Employees who are learners** and a **company's needs**, not technology, are the starting points. E-learning should start to be viewed simply as an additional way to train and develop employees and enhance learning process of the company, which has to be integrated into a multiple experience, functions, taking care of avoiding channel conflict and maintaining consistency and quality across different channels.

First Focus on Needs (content & process) instead of on technology. Exactly as other successful HRM programs for years down the road, e-knowledge development experiences must be built on the sound foundation of an **accurate need analysis** to determine which the best solution to employ is. When technology is involved, the Computer Supported Collaborative Working (CSCW) approach can be usefully applied. This view on the **nature of work processes** and **organizational learning** and its **relationship with technology**, is a useful framework for analyzing the introduction and successful development of e-learning in organizations. To understand how people "get the work done" is often the best basis for starting an e-learning project that combines a coherent and integrated technology with real needs and achievable results. **Leveraging on existing culture, communication &**

coordination can make a technological tool extremely successful and close to the business.

Test different options (tools) before building a syste**m**. In a company that has any experience with different e-tools and their characteristics, starting with a systematic implementation plan from the **beginning risks becoming** a top-down approach with little space for errors. This approach can compromise the entire project. Experiences applied in specific areas with a bottom-up approach can be very useful to model before looking for a systematic development and a central technological platform. When e-solutions have become a part of the strategy, naturally accepted both by employees and implementers, a form of central coordination and systematization can be evaluated and, often, required. Especially a **Learning Management System** should be the last step after a lot of lead and experimental programs, not the first decision from which all the rest would follow. This does not mean lack of a learning strategy, but that the learning strategy is not dictated by the technology.

Use a Systems Model (Systems Approach) Using a **systems management approach** could be one of the better ideas. It is systematic approach involving all the functions systematically i.e. when and where the need for input is required. Strategic management keeps itself to bigger issues and other petty tasks are looked at by respective departments. As discussed earlier the use of Input functions at the start, followed by Line function where most issues arrive, and later output process keeps tasks simple, coordination easy and implementation phased.

Stick to the Knitting (basics) & Get them right**.** It is clear form the HRIS discussion until now all the new software, networks, and **initiatives like ESS etc would be use less** if people don't use the and own them. Plus it is easy to loose users; now it is only a click away! Disappointed learners are likely to punish a poor experience by never returning. Satisfied ones are likely to reward a positive experience with continued patronage. Therefore, an e-learning solution has to be easy to use, provide a sufficient choice of learning experiences, be reliable in the technical process, and offer a satisfactory support and help service

Focus on Employees services**.** People cannot be let completely alone. They easily loose motivation in front of a screen full of text if they do not see it as helping their self-development , training and find it rewarding to them .Here the **role of HR** is critical as a motivator, problem solver especially in subjective motivation and inter-organizational service to employees The key word for them is to *Focus on service to learner*s.

HR's Orientation is The Key organization's HR function responsible with structure and culture can both enhance and detract from effective knowledge management self-organizing communities of practice, e-training and development, empowered middle managers or mediators, appropriate reward systems, clearly communicated knowledge visions and collective value systems greatly support knowledge sharing. IT is doable but not easy specially in the e-HRM initiatives. They are new not well experienced but if one can reduce the possibility of, ill-defined roles, misaligned incentive systems, unclear corporate visions strategy, poor process integration and disruptive organizational politics inhibit knowledge sharing.

HRIS In Pakistan: A lot of real value addition occurs form the human resources that a company has, and value addition is basis of survival in the long term. Thus from this discussion we may ascertain, especially with the WTO and post globalization looming in the horizon Pakistani companies have to understand and develop their Human resources systems first of all and integrate their Information systems to be not only successful but to survive form the competition coming form the west as well as from its neighbors.
This research could be a starting ground for Pakistani companies like Muree Breuery , Packages LTD, Pakola LTD and Chaudery Dairies PVT LTD etc.

In short, for HRIS and e-HRM initiatives to work; individuals must directly experience personal benefit from sharing or making their knowledge explicit. Organizational structure, processes and culture are vital components for actualizing knowledge management processes and technologies.
The ability of companies to consolidate different resources, including training, development and knowledge management solutions, to take advantage of their legacy training & development assets, and ensure a seamless learning experience across the organization, are the most important factors of success of a modern learning strategy along with learning culture in today's business world. It is more a matter of putting together what they already have, rather than rushing to find the last new thing they do not have. This is probably more difficult to do, but certainly more rewarding.

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Appendix A

HORIZON BLUE CROSS BLUE SHIELD OF NEW JERSEY

Case-study description

The company. Horizon Blue Cross Blue Shield of New Jersey, Inc., (HBCBSNJ) a not-for-profit organization headquartered in Newark, New Jersey, is the leading health services corporation in the state and a major regional provider of health services. The company is currently in the process of becoming an IPO for profit public company. Horizon BCBSNJ' s mission is to develop, manage, finance, and provide access to high-quality, cost-effective health care delivery systems, insurance, and related products and services to public and private markets. It presently provides health care coverage to over 2.5 million people. The company has annual revenues of over $5.9 billion and employs about 4,600 people distributed in multiple locations.

Learning strategy and organization of the Training function. The company has a corporate university, the Horizon BCBSNJ University, sponsored by Learning & Development (L&D) a centralized structure comprised of a team of training and development professionals from all divisions of the company that began to work in December 1998 with the intent of creating and sustaining a learning culture within the company. Learning & Development pulled together different training initiatives previously scattered around the company and started to restructure and redesign classroom training. Two years later, Learning and Development became smaller and. more focused on fewer people delivering and designing learning for the company. At the same time, the company decided to introduce e-learning in its learning strategy.

The training department provides training to the different areas of the company, and touches most of the learning within a corporate environment. The main target population, however, is the professional groups that comprise half of the jobs: customer service and claim processing. These groups are heavily unionized and are measured on productivity and quality standards. Their union contract does not provide for training taken outside work hours and outside the company.

As a consequence of the introduction of e-learning in May 2002, the Training structure has been **reorganized and jobs redesigned**. The previous organization was functionally specialized, with trainers, instructional designers, and developers separated for classroom and computer -based training. The new model is based on account managers who are the interfaces with different company areas. Internally, they relate with a structure where there are a vendor’s specialist, content developers, instructional designers for every kind of delivery media, graphics, editors, an IT person who supports all the L&D systems and is the interface with the IT Department. The trainers’ unit will undergo a reduction through attrition and many will become facilitators of learning labs.

The HR Department is also working to change a designer’s skills to prepare to design e-learning. In general, however, the shift requires all the employees to learn new Skills **History and characteristics of the e-**

learning project. The L&D program started to plan and implement an e-learning project at the beginning of 2001. Until then the majority of the training was classroom-based. The exception was a small percentage of CBT-based training. The company stated to look at e-learning because its classroom training costs and administrative costs were high, training was long, and the company was expanding its business into two locations outside the main area. The company wanted to target more adult learning styles and find a way of reinforcing what was learned in the classroom. The e-learning approach derived from the fact that the company looked out at where the training industry was going. E-learning is defined by the company as "a broad set of applications and processes that allow an individual to acquire knowledge and develop new skills through computer-based technology using an internet browser" (company's e-learning brochure). Nevertheless, the e-learning project is not meant to completely replace traditional classroom training, but to complement and supplement it. This approach allows the company to expand its training offer and to quickly train more employees at various locations, and employees are able to access an alternate means of learning for professional development. A blended solution has always been the goal. M.A., the Instructional Design Manager at Horizon BCBSNJ says:

E-learning to us is part of a blended solution. Our approach to learning involves classroom training, on the job training, learning labs, on-site learning, and virtual classroom is scheduled to be implemented in the second quarter of 2003. It is like a package of learning solutions. When we design a learning solution it has multiple components. One component is our online reference material to support our claims systems. It is a repository of information that is part of the learning package (interview with M.A., Horizon BCBSNJ, Newark, 1/16/2003).

The migration to web-based learning and learning labs was intended to be a way to reduce traditional instructor led classroom training in order to enhance access and efficiency of the learning experience. The company made the decisions to buy a Learning Management System (as opposed to having it hosted by a vendor), to connect it **with the HR administrative software (People Soft)**, and to start developing web based learning internally. The e-learning project and all the internal training are paid with a capital budget at the enterprise level, and then allocated to the L&D that manages it in a 5 years plan. Every unit has its own training budget to send their people outside the company for training not offered inside (conferences, special events, etc).

The adoption of e-learning has been the object of an internal communication plan developed in collaboration with the Communication Department. There were flyers, posters and brochures, communication to Vice Presidents, directors and supervisors, meetings and demos. To every employee was sent an e-learning packet and emails with their login and password. At every opportunity the e-learning message is launched.

Structure and tools. The e-learning program is structured around the Horizon BCBSNJ University and consists of a web page with access through a single sign-on to:

- Asynchronous web-based and synchronous (virtual classroom) learning solutions.

- Learning labs.
- An electronic performance support system (EPSS called OLI).
- A Learning Management System (LMS).

The gateway is a web page in the company's corporate home page. The learning web page serves as a portal for employees to access web-based, asynchronous learning courses hosted on a Learning Management System (Pinnacle) and the online information system (OLI). Virtual teleconferencing and virtual classroom (Centra Software System), and message boards through the LMS are going to be activated within few months, while electronic communication via e-mail has just been activated. At this moment access is possible only from the company's intranet, but the second phase will be to make it Internet-accessible, so that it will be possible to take the courses from home. Web-based asynchronous courses are both purchased or designed internally and focus on: new employee orientation, product knowledge, compliance, medical terminology, pc software training, anti-fraud, service and sales functional competencies, core and cultural competencies (soft skills). The purpose of learning labs is to complement and enhance learners' knowledge and skills and provide a social experience after taking the electronic e-learning module, to discuss, ask questions, and open a dialogue about what was learned previously. At this moment, to take a course employees must have permission from their supervisor, because training has to be linked to the competences needed. The supervisor approves it and makes sure that it is linked to the employee's development. The company's purpose for the supervisor approval is to ensure that there is no business impact to the day-to-day operation of the department and to make supervisor and employee partners in the development process.

The LMS supports web based learning, self-registration, and training management. It also provides consistent data collection and reporting. The purpose of the LMS for the company is to provide an integrated, central framework of classroom and non-classroom learning solutions that delivers training to users in different locations, and provides instantaneous tracking and assessment of employees from a central location. Due to technical problems of interoperability, the e-learning project was effectively launched in November 2001, with six internally developed courses. At the end of 2002, the company bought a library of courses from Skillsoft (soft skills) and from Netg (computer training) and is also developing internally other courses that are specific to the business. Many of the courses for employees' development will not be offered in the classroom format anymore, but presented as web-based courses coupled with learning labs. There still is traditional classroom training, but the idea is to shift to the web 20% of courses in the next three years. Now when we design we first think if it is possible to have it on e-learning format, and then see if some classroom training is needed. The customer service, we want to have most of that training through e-learning and learning labs and these will be totally internally developed. We buy what it is available, the rest we develop internally. The claim systems are specific and we have to develop the training (Interview with M.A., BCBSNJ, Newark, 1/16/2003).

The other piece of the e-learning model is OLI, the reference repository, which in some cases replaces previous classroom training on company products and claim systems. It started out as a tool for Customer Service,

thus 70% of what is online is customer service related references. Today, it is beginning to be used by other departments and groups, such as Legal, and Methods and Procedures. The departments provide the content that is centrally uploaded by the Training team. Within different areas there are work groups that make sure that updates get identified and then uploaded.

Results. Is the e-learning project successful at BCBSNJ? In terms of cost savings, the investment for employee was $ 741 in 2000, and rose to $ 1083 in 2001, probably for the effect of the LMS purchase, and it is down to $ 911 in 2002. The number of courses offered rose from 161 in 2000 to 186 in 2002, mainly due to training needed to sustain the multiple, Window-based systems implemented during 2002 in the Customer Service area. In terms of people taking the online courses, desired success is not there yet. In fact, apart from an online compliance course that has to be completed by every employee, the other courses do not register a sufficient participation rate. The response is not satisfactory even if there has been an increase in participation recently from the initial 20 people to the current 170 (many from the satellite offices). Two new mandatory courses have been launched: HIPPA and Employment Law, and all employees will be expected to complete them. One of the problems resides in the fact that:

Many employees are claim processors and they are on productivity/quality standards, so they do not have time to take the course during the day and there is also a union contract, so we can't say to them "go home and learn it". One of the struggles of our managers in Customer Service is how to develop a team keeping those standards of productivity and service (getting the numbers out). Non-union employees have similar issues in that they find it difficult to incorporate the learning into their busy work scheduled. We have a performance management system and we plan to link our training to that in a way that these courses can be seen as a solution to lacks in performances. We have nine core competences and all our courses are matched with the core competences, so I may say: "you may improve in this competence and here there is course on xyz, and you need to take it". Managers need to be educated and know that the tool is there (Interview with M.A., BCBSNJ, Newark, 1/16/2003).

The company believes e-learning has to be seen as a benefit for employees, so if one works from home it is for his or her own development, and that the company is not responsible for all of everyone's training. There is a big gap between company and employees' ideas of a learning environment. If we say that we are sending them to class for three weeks the training is worked into the business team's production schedule, but if we ask them to take e-learning courses, some see this differently in their mind because the purpose is to have them sitting at their own desk and taking the course. It is an evolving process and if we do more e-learning and they start seeing it as more variety in the learning experience, they will be more receptive. It's tough. We do learning during the day that is what we have always done, so I don't know how it can work in a different way in a contract environment. We would like them to embrace that at any given day there is an opportunity to learn and that it is accessible and a continuous learning environment (Interview with M.A., BCBSNJ, Newark, 1/16/2003).

In spite of the disappointing initial results, the company decided to buy more

courses to implement the course library. They see it as a part of their learning strategy of moving learning from the classroom to the web. Classroom training will be progressively reduced, especially for Soft Skill and some Customer Service functions, so if people want to learn they will be forced to turn to e-learning.
We know that over the next two years the e-learning will be our primary source of learning. There may be a disconnection between what we know and what people know that is going to happen. That is why it is important for us to have a communication strategy and an ongoing communication plan to continuously work this new way of learning into the corporate culture (Interview with M.A., Horizon BCBSNJ, Newark, 1/16/2003).
The company sees this shift as an attempt to change the culture of the company and expects that as classroom training will be more and more removed, people will turn to the e-learning version. The decision to push e-learning further is primarily based on the company's belief in the blended model for adult learning, and the breadth of knowledge that is available via on-line learning. There is also an economic driver. In fact, the investment in the LMS has been significant, and needs to be sustained and continued.

We totally believe this *(blended approac*h) is a better learning experience; it just so happened that we purchased the LMS…. The ASP model is better for this, that if the company does not embrace technology, it is easier to walk away. Part of our commitment is because we bought the LMS and have invested a lot to train our internal staff to learn the skills needed to deliver and develop e-Learning, so you are not going to invest that kind of money and just walk away, that is part of. why we keep going, we made a major investment (interview with M.A., Horizon BCBSNJ, Newark, 1/16/2003)..

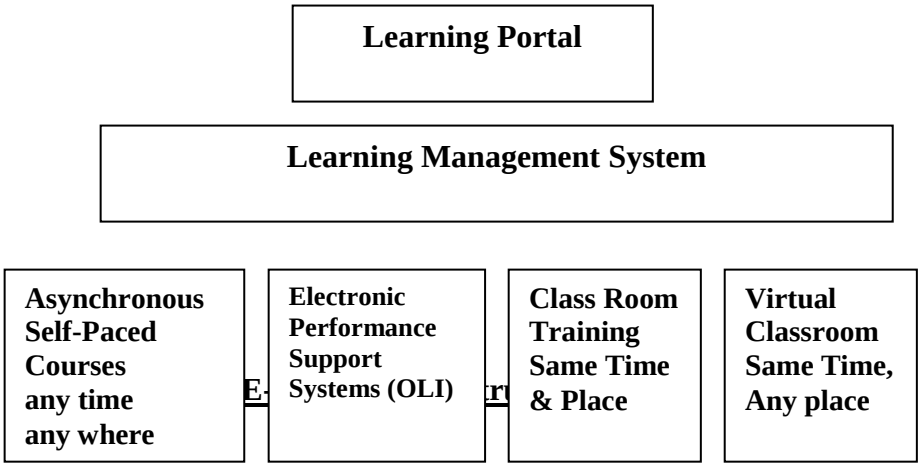

Table A: source: Horizon BCBSNJ

Project analysis

The e-learning project at Horizon Blue Cross Blue Shield of New Jersey has been deployed following a remarkable internal coherence and a gradual development approach. At this moment, it mainly consists of two parts: a library of self-paced web courses and an online references repository that serves the needs of customer service representatives. Connecting tools such

as bulletin boards, online discussions, and virtual classroom are going to be implemented, but they are not yet in use at the moment this thesis is written.

A push toward centralization of the training function was already in place before the project was started. Nevertheless, adoption of e-learning tools enhanced and reinforced it, leading to a significant change in the organizational structure of the Training function, to a centralized point of entry, the web page, and to the implementation of a single tracking and management tool, the LMS. Precisely because of the adoption of the LMS, as a fundamental part of the e-learning strategy, two main consequences resulted:

- A stronger centralized control over the individual formalized learning with a consequent empowerment of the Training function, and a tighter link with the performance management system, even if the link between competences and career development is still at an embryonal phase of implementation.
- Persistence in continuing the project even if actual participation results are not encouraging, due to different factors. Particularly interesting is the upfront investment from both a financial and an organizational point of view.

The e-learning project architecture, although designed with a strong internal coherence, appears to diverge from the culture and work practices of the company, and especially of the main targeted professional group, claim processors. The approach adopted is a top-down attempt to transform the learning culture using technology as the engine of change. There is a sense of disconnection and different perception about the role of e-learning between the company HR department and employees. It appears as if the Training department saw its role as the herald of a cultural change that many are still reluctant to embrace.

In his book *Communities of Practice* (1998), Etienne Wenger makes the ethnographic study of a claim-processing unit the basis for a theory about collective learning in communities of practices. From Wenger's account of the job and of the learning practices, most of the learning that sustains the ability of the processors to do their work happens in a collective way in developing common work practices.

Although claims processors may appear to work individually, and though their jobs are primarily defined and organized individually, processors become important to each other. They act as a resource to each other, exchanging information, making sense of situations, sharing new tricks and new ideas… (Wenger, 1998, 46-47).

The CSCW approach is helpful in this case to make sense of what seems to be a significant gap between the official representation of the job and the practical actions performed by the target group and, therefore, of the disconnection between the company's learning strategy and its actual acceptance. In fact, the structure of the e-learning project, offering mainly self-paced web courses, seems to rely on the individual organizational representation of the job, neglecting instead the collective and social nature of its practices and learning processes. A bottom-up approach to e-learning, valuing connection tools and acknowledging already existing communities of learning and practice, could have facilitated its adoption and appropriation by the community of claim processors and customer service

representatives. At this moment, it appears that there is no planned support for communities of practices and that the only notion of communities of practices is presently related to the introduction of bulletin boards as instruments to enable them. Technology can only be used to sustain something that is already a cultural understanding of the company. It cannot create it. Sustaining communities of practice is far more complex than providing a technological tool. It requires understanding their voluntary nature and structure, and the design of a set of principles and pre-conditions that help them to develop and grow (Wenger, McDermott, Snyder, 2002).

Another point of discrepancy between the structure of the e-learning project and the work environment is due to the fact that a large part of the company's employees, and particularly the groups that are the main target of the shift to e-learning, are unionized and respond to the Union's contract. In fact, while one of the greater advantages of e-learning resides in its flexibility (anytime, anywhere), the rules that govern the jobs of most of the employees have an extremely rigid approach to training. Viewed as a part of the union contractual agreement, training is to be taken during the work day. The flexible modularization of e-learning is also in open contrast with the pressures on productivity and service standards that measure individual and collective performances, throughout the monotonous rhythm of the work day for both union and non-union employees.

Moreover, the idea of a flexible approach to self development, offered by the company as a benefit to its employees, diverges from the fact that e-learning courses have to be approved and authorized by a supervisor in order to be taken. In fact, they must relate to one of the company's explicit core competences. This approach, of course, limits the flexibility of e-learning and the notion of learning for self-development. The same contradiction challenges from the beginning the already planned access to the Horizon University from the Internet, so that the connection with the e-learning courses can be made from home. Why, in fact, should employees want to use their time at home to perform a training activity that is expected to be for self-development, but must receive the approval of their superiors?

A final factor that contributes to the slow take off of the e-learning acceptance is the level of technological proficiency of employees. The company, in fact, has started only two years ago to migrate from mainframe to a personal computer, Window-based claim processing environment. It appears that, the project was developed looking at other leading industries more than at the company's internal integration and cultural coherence. Since the project is expected to continue on its track, to encourage participation, the company has decided to rely on an internal communication campaign, on a close link of e-learning with the performance management system, and on the supervisor's help to persuade employees to use e-learning.

It is possible that e-learning will finally produce positive results at Horizon BCBSNJ, but, for all the reasons described above, its adoption will be more the result of a forced adaptation to a central, abstract idea of learning, than an harmonious integration between technology, work practices, and organizational culture.

Appendix B

(Note Only Relevant portions of this Study are Given)

EFFICIENCY AND PRODUCTIVITY IMPROVEMENT THROUGH TECHNOLOGY TRANSFER, FOREIGN DIRECT INVESTMENT AND PRIVATIZATION. THE CASE OF INFORMATION TECHNOLOGIES INTRODUCTION IN THE PRIVATIZED PORT OF VERACRUZ, MEXICO

A Thesis submitted to the Faculty of the Graduate School of Arts and Sciences of Georgetown University in partial fulfillment of the requirements for the degree of Master of Arts in Communication, and Technology By Alejandro H. Bermudez-Del-Villar, B.A.Washington, DC

Chapter I

1.1 Introduction

Over the last decade, the world has undergone a fundamental shift towards what today has been called globalization. Most scholars agree globalization has been mainly driven by economic and technological forces. The latter force has been represented by the new technological breakthroughs in information and communication technologies, whereas the former force was represented by the rise of international actors-Multinational Corporations (MNCs)- that lead the process of international transactions. In the search for greater competitiveness, MNCs have expanded their operations all over the world establishing what may be called a global manufacturing system based on labor intensive export platforms in low-wage regions [1].

Thus, MNCs have heavily invested in the developing countries to establish the decentralized production and distribution subsidiaries that would allow them to optimize opportunities and maximize profits around the world. Recent studies claim that the result has not only been a major increase in Foreign Direct Investment (FDI) from developed into developing countries, but also a considerable transfer of technology in the same direction [2].

Nonetheless, both FDI and technology transfer are not free resources for all developing countries. MNCs carefully invest in those specific locations where their operations have better probabilities of increasing their competitiveness. Henceforth, acknowledging the opportunities and benefits lying behind the transfers of capital and technology, the developing world has embarked on a series of economic reforms that would make them more attractive to foreign investors. For instance, one of the main regions attracting FDI during the 90's was Latin America.

The economic reforms implemented in the Latin American region included an adjustment in the macroeconomic indicators, deregulation, export oriented measures, and privatization of public companies.[3] Privatization was executed in the hope of revitalizing these burdensome uncompetitive enterprises and of promoting foreign investment.

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[1] Mittelman James H. *The Globalization Syndrome. Transformation and Resistanc*e. Princeton University Press. New Jersey, 2000. p.38.

Among the countries with most successful privatization programs in the region is the Mexican case.[4] In fact, defenders of privatization point to the positive results of the Mexican privatization program, which has greatly helped to modernize the infrastructure and productive resources of the country.[5]

FDI, however, is not sufficient for development to take place. Studies in economic development have shown that sustainable economic growth requires not only an accumulation of factors of production, but also improvements in technology. Acknowledging this fact, governments implementing reforms-especially privatization-expected to bring both investors and new means to enhance efficiency and productivity, such as technology. Currently, the technological revolution is led by communications and information technology (IT). The aforementioned studies claim that information technologies can actually generate gains in productivity and efficiency that would promote faster economic development and better market coordination.[6]

One of the main privatized services in Mexico was the administration and operations of the port of Veracruz.[7] This port has shown impressive results regarding both efficiency in trade operations and cargo coordination. The case of the port of Veracruz provides a good basis for analyzing the combination of factors involved in the enhancing of efficiency and productivity in port facilities.

This research aims to explore these issues by trying to answer the question: Under what circumstances has the combination of technology transfer, Foreign Direct Investment, and Privatization brought about efficiency and productivity gains in the case of IT introduction in the port of Veracruz? The first segment of the research is dedicated to the building of the theoretical framework. This section will be subdivided to explain theories dealing with globalization and its driving forces. The second part will analyze the relationship between technology and economy, as well as revises the specific economic peculiarities and innovations triggered by the use of Information technologies in port facilities. The third section revises new economic trends in Latin America, the reforms made and its results during the 90's and the privatization program in Mexico.

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2 As described by Folker Froebel, these operations may be considered as part of a New International Division of Labor. Frobel, Folker. Et.al. *The New International Division of Labo*r. Cambridge University Press. 1980.

3 Moguillanski, Graciela and Ricardo Bielschowski. *Investment and Economic Reform in Latin Americ*a. ECLA. Santiago,Chile. 2001.p.23

4 Kikeri, Sunita, John Nellis, and Mary Shirley. "Privatization:The Lessons of Experience*".* World Bank, June 1992.p.1

5 La Porta Rafael . "The Benefits of Privatization –Evidence from Mexico". In Private Sector. Note 117. World Bank. June 1999.p. 4.

6 Hallberg, Kristin and Bond, James. "Revolution in Technology for Development". Working Paper. The World Bank. p.3 avaliable at: www.worldbank.org/html/fpd/technet/revol.htm

7 Veracruz is the most important port in the country regarding international trade. Among the most important actions taken by the new administration, we find a heavy investment in infrastructure of port facilities, especially in information technology. See Sanchez, Victor German and Placencia-Vela, Alejandro. "La Tecnologia Informatica aplicada a la Modernizacion del Puerto de Veracruz". LANIA Newsletter. 1997. p. 2.

In addition, this segment of the research is further divided to review the privatization process of the port of Veracruz. Building on the previous sections, the third part will analyze the introduction of information technologies in the facilities of the port of Veracruz, as well as it will analyze whether or not the combination of these technologies with other factors have brought about efficiency and productivity in the port itself. The fifth part of the research will contain the final conclusions.5

Chapter II

2.1 The Forces of Change.

Globalization, Actions & Reactions The previous chapter provided a hint as to why, today, most developing countries concentrate much of their efforts trying to attract Foreign Direct Investment (FDI), as multinational corporations spread their offshore operations. The first chapter also pointed out the many benefits that host countries can derive from FDI. Beyond the benefits from the capital itself, FDI provides technology transfer, which enhances efficiency and productivity. In addition it helps to promote more competitive product markets.[8]

To reap the benefits of these spillovers, however, developing countries must generate the right circumstances not only to attract but also to absorb foreign direct investment.[9] To understand the best strategies for attracting foreign investment and realizing its benefits, we need a firmer understanding of both the global forces that serve both to promote FDI as well as of the conditions and context in which developing countries must compete for it. This chapter provides an analytical framework for developing such an understanding. First it provides a definition of globalization and briefly describes how MNCs both responded to the changes created by the new economic circumstances. Then the chapter deepens the analysis by considering each of the main forces driving to globalization-namely world wide economic reforms, information technologies and competition. In addition, the examination of competition looks at new forms of MNCs organization and thus new means for developing countries to derive positive benefits and spillovers from it.

2.1.1 The Origins of Globalization

The 1990s witnessed radical changes on a global scale. One of the most dramatic shifts occurred in the economic sphere. In fact, the changes have been so great that, today, national boundaries no longer serve as the basic unit of production. Rather, production processes are now organized in complex ways involving world-wide movements and cross-border production processes.[10]

The result is a global economy in which multinational corporations (MNCs) play a major role. Seeking new markets and greater profits, MNCs have spread

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[8] Mattoo, Aaditya, Marcelo Olarreaga and, Kamal Saggi "Mode of Foreign Entry, technology transfer, and FDI Policy". Working paper. TheWorld Bank. p.i Available at: http://econ.worldbank.org/files/3182_wps2737.pdf

[9] Saggi. Kamal. "Trade, Foreign Direct Investment, and International Technology Transfer: A Survey". Department of Economics. Southern Methodist University. Paper to serve as a background paper for the World bank's "Microfundation of International Technology Diffusion".p.39.

their operations all over the world. This shift in economic activities has given rise to a specific international production pattern. Multinational corporations have moved to offshore production sites in low-cost locations, where they use the "assets developed at home to exploit international factor cost differentials.'[11]

The transnational activity of multinational corporations is not the only force driving globalization. Deregulation, privatization, and trade liberalization, together with the diffusion of advanced information technologies, have also played a role. [12] These series of forces have not only intensified competition; they have also forced businesses to restructure their organizations in order to survive.

As described by Dieter Ernst, globalization has given rise to Global Production Networks (GPN). GPNs not only disperse the value chain across firms and national boundaries, they also create parallel integration processes of network participants, which take the form of hierarchical layers.[13] Because GPNs provide new opportunities for diffusing international knowledge to lower-tier network suppliers–usually situated in developing countries- they create a unique opportunity for local capability formation.

To correctly understand the Global Production Networks' role in globalization, and their potential for developing countries, it is necessary to characterize in more detail each of the forces driving globalization.

2.1.2 The Driving Forces

a) Economic Reforms The institutional change that has had the greatest impact on globalization is liberalization. As defined by Joseph E. Stiglitz, liberalization entails the "removal of government interference in financial markets and of barriers of trade"[14] Explaining the impact on globalization, Dieter Ernst notes that these institutional changes have shaped the allocation of resources and the rules of both competition and firm behavior.[15] Accordingly, Ernst identifies four separate, but interrelated, institutional changes driving globalization: trade liberalization, financial liberalization, deregulation, and privatization.

The origins of these economic reforms can be traced back to the 1970's when governments sought new economic approaches to cope with the failure of the Keynesian economic model, as witnessed by pervasive stagflation [16] . Although these policies originated in the United States, eventually regional and international players—

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10 Dicken, Peter. *Global Shift.* Second Edition. Guilford Press. New York. 1992. p.4.

11 Ernst, Dieter. "The New Mobility of Knowledge: Digital Information Systems and Global Flagship Networks". East/West Center Working Papers. Economic Series. No. 30, July 2001.p2

12 Ernst, Dieter. " Global production Networks, Knowledge Diffusion, and local capability Formation. A Conceptual Framework.". East/West Center Working Papers. Economic Series. No.19, May 2001.p. 4-5.

13 *Ibid.* p.1.

14 Stiglitz, Joseph E. *Globalization and its Discontents.* Norton & Company Press. New York,. 2002. p.59 15 Douglas North would most likely agree with this account. He describes institutions as the humanely devised constraints that shape human interaction. For more information see North, Douglas. *Institutions, Institutional Change and Economic Performanc*e. Cambridge University Press. New York. 1990. p.3

such as the European Union, NAFTA and international financial institutions—embraced these policies. For example, multinational finance agencies typically made financing for structural adjustments contingent on economic reforms. Thus, in the mid 1980's, the International Monetary Fund (IMF) justified structural changes based on monetary theory. On these grounds, the Fund called on governments to set in place stabilization programs designed to encourage trade liberalization, reduce deficits, free up currencies and exchange controls. [17]

Trade liberalization gained a boost a few years later when the international community –led by the United States acting through the (GATT)—took further steps to encourage the free flows of good and services. These efforts were not only successful in lowering tariffs; they culminated in the establishment of the World Trade Organization (WTO)—a forum for negotiating international trade agreements and other relevant trade-related issues such as Foreign Direct Investment, since investment inflows are likely to accompany trade liberalization.[18]. Continued internationalization of trade and production, along with the revolution in communications, triggered even greater liberalization. In the area of banking and finance,[19] for example, major governments such as the US, the UK, France, Germany and Japan eliminated their restrictions.[20] Worldwide financial liquidity was greatly increased as a result. At the same time, foreign direct investment was likewise deregulated. Hoping to attract new investment and capital inflows, many governments -especially in the developing world- established new legal frameworks,[21] which were intended to encourage private investment – both national and international-in their economic infrastructures [22] .

The privatization of public enterprises constituted another area of reform. By selling inefficient public companies, governments hoped to rid themselves of a major source of their deficits, thereby balancing their national accounts. Privatization measures were also undertaken because of the anticipated positive effects on production systems [23] .

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16 Stagflation**,** as defined by Jane Jacobs,is a combination of rising unemployment and inflated prices, which in theory should not exist. For more information see Jacobs, Jane. *Cities and the Wealth of Nations.* Principles of Economic Life. Vintage Books. NY, 1985 p.9

17 Cardoso, Eliana. *Latin America's Economy. Diversity, Trends and Conflict*s. MIT press Cambridge,MA.1995.p.,173.

18 UNCTAD (United Nations Conference on Trade and Development). "Liberalizing Foreign Direct Investment Policies". World Investment Report 1994. Chapter VII. 1995. p.281

19 Tsoukalis, Lukas.*The New European Economy Revisite*d.Oxford University Press. New York. 1997 p 95

20 For instance, the emergence of Eurodollar markets in the 60's, along with the international financial transactions easing through IT breakthroughs, was a major stimulus for financial services deregulation since deregulation is a necessary process to facilitate further financial internationalization. For more information see Dicken, Peter. Global Shift. Third Edition. p.404

21 The concept of deregulating to allow FDI denotes the tempering or removal of those market distortions that result from (a) restrictions applied specifically(and hence discriminatory) to foreign investors, and (b) the granting or withholding of subsidies that discriminate in favor or against MNC's.For more information see UNCTAD. "Liberalizing Foreign Direct Investment Policies". p.287

22 It is possible to identify, for instance, four types of Foreign Direct Investment: natural resource seeking, market seeking, Efficiency seeking and capability seeking. For more information see Dunning, John H. *The Globalization of Business. The challenge of the 1990's*. Routledge. New York. 1993.p.375

23 Under the new open market rules, privatization was supposed to foster efficiency gains and further economic development through competition among the new private investors. See Rogozinski, Jacques. *High Price forChang*e. Privatization in Mexico. IADB-John Hopkins University Press. Washington, D.C.1998. pp.80-86.

The intent was to foster economic "efficiency by reducing unproductive government rent seeking, improving the productivity of public investment, freeing up credit and inducing savings, and eliminating price distortions."[24] Moreover, by privatizing public companies crucial to the economic base - such as railroads, telecommunications, roads and ports- governments also expected to achieve infrastructure modernization and adoption of technologies [25] best suited for regional and global markets.

Global corporations have been the main beneficiaries of these economic reforms. Taking advantage of the greater range of choices for market entry, licensing, subcontracting, etc., these corporations have been able to establish global network flagships.[26] In addition, with economic reforms, global corporations have been able to gain better access to external resources and capabilities that they need to complement their core competencies (outsourcing). Likewise, companies are now far less constrained in distributing their value chains on a global basis. [27] Although not necessarily intended, economic reforms have forced governments and firms to behave in entirely new ways. For example, as FDI has become more ubiquitous, host countries have found it necessary to differentiate themselves from their competitors by other means. Recognizing that FDI facilitates the transfer of capital, technology, and organizational skills from one country to another, [28] countries have set FDI as a major goal. To attract such investment, potential host countries have adopted much more aggressive policies geared to facilitate business and the development of created assets [29] . As described by Susan Strange, reforms have forced governments to bargain directly with foreign firms to locate their operations within their territory. As she notes, "While the bargaining assets of the firm are specific to the enterprise, the bargaining assets of the state are specific to the territory it rules over"[30] . For example, as FDI has become more ubiquitous, host countries have had to differentiate themselves from their competitors by other means in order to attract foreign investors. Technological transfer or acquisition is, however, no guarantee that the expected spillover benefits will be realized. The prospects for technology transfer will be greater to the extent that developing countries have the infrastructure and knowledge necessary to absorb it, and convert it into knowledge [31] .

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24 Office of Technology Assessment.Oportunities for Trade and Aid. Global Communications September 1995. p.62

25 Ordover, Janusz and Evamaría Uribe. "Sustainable Privatization in Infrastructure: The Role of legal and Regulatory Institutions". In Basañes Federeico et al. Editors. *Can Privatization Deliver? Infrastructure for Latin Americ*a. IADB. 1999. Washington, D.C. p.11

26 Network flagships is the name Dieter Ernst calls global corporations. In Ernst. " Global production Networks…p.5

27 *Ibid* .p.4 Value chain groups a firm´s activities into several categories distinguished between those directly involved in producing, marketing, delivering, and supporting a product or service, those that create, source, and improve inputs and technology and those performing the decision-making. Concept drawn from:Porter, Michael. "Competing across Locations. In the competitiveness of locations".Harvard Business School Press.1998 p.315.

28 Williamson, Oliver E. *The Economic Institutions of Capitalism.* The Free Press. NY, 1985. p.292.

30 Strange, Susan. "States, Firms and Diplomacy". Edited text of an article which first appeared in International Affairs, London. Vol. 68. no. I January 1992,pp 1-15. p. 65.

One factor helping them to generate such absorptive capacity is the widespread diffusion of information-based technologies, a subject to which we will now turn.

b)The Role of Information Technologies

As mentioned above, a second force driving globalization is the advances in and diffusion of information technology (IT). Both the geographical location and the scale at which businesses organizations operate are directly related to the availability of the means of transport and communication.[32] Allowing greater mobility of materials and equipment, today's information technologies have made geography much less significant.[33] For IT breakthroughs have "substantially reduced the friction of time and space, both with regards to markets and production." [34] Thus, firms can now serve distant markets just as well as local ones. They can also distribute their values chain across national borders, establishing their offshore activities in those locations where they can operate most efficiently and gain the greatest comparative advantage [35]. Recent technological breakthroughs have not only encouraged companies to globalize their operations; they have made it necessary for them to do so. [36]

It is only by going global that businesses can amortize the costs associated with the creating and deploying new technologies and reconfiguring their business organizations.

Henceforth, companies must expand their sales beyond their national markets if they are to remain profitable.[37] . Modern information technologies, moreover, have not simply fostered globalization. Equally important, because these technologies are more flexible than previous technologies, they have allowed businesses to develop new organizational schemes, based on networked business operations.

> As described by Peter Dicken, the cost of **creating and deploying new technologies entails** the cost of IT Research and Development (R&D)and also the cost of implementing IT within the organization of the company. Dicken, Second edition.p.103

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31 Hallberg, Kristin and Bond, James. "Revolution in Technology for Development". Working Paper. The World Bank. at: www.worldbank.org/html/fpd/technet/revol.htm p.2-3

32 Dicken, Second Edition. p.103

33 *Ibid*.

34 Ernst.p.5

35 As described by Michael Porter, **Comparative advantage** can be obtained through locating in the most cost-effective pool of raw material or labor, for example. See Porter, Michael. p. 316

36 Dicken. p.103..

37 *ibid*.

With broadband, digital technologies the cost of data transmission is greatly reduced [38] , and the coordination of economic transactions is much easier. [39] Taking advantage of these technologies, businesses can eliminate paper records, increase their flexibility and become more responsive, as well as extend their use of outsourcing. [40] In sum, information technologies foster the development of "leaner meaner and more agile production systems that cut across firm boundaries and national borders" . [41] In a networked environment, the overall objective of a global network flagship, is to provide a faster response to" changing circumstances, even if much of its value chain is dispersed."[42]

IT-related breakthroughs, however, are not the only means by which firms and network flagships can take full advantage of globalization. Another key facto is education and training. As Alberto Chong has pointed out: "Skilled and adaptive people play a crucial role in taking advantage of the potential offered by the explosion of new knowledge and accelerating technical change."[43] The role of knowledge management is important with respect to both the firm and its local suppliers. Knowledge management is also critical for maximizing FDI related knowledge transfers as well as economic efficiency.[44]

c) Competition [45]

The rapid deployment of information technologies in the context of economic reforms has radically transformed the competitive arena for firms around the world. In the process, competition promotes further globalization.

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38 As described by Dr. Garcia, the process of transforming analog messages (spoken work, a picture, or letter) into signals made up of discrete pulses that can be transmitted, processed and stored electronically See Garcia, D. Linda. Networks and the Evolution of Property Rights in the Global, Knowledge-based Economy. Paper delivered to the International Studies Association Conference. Chicago IL. February, 2001.p.20-21

39 **Competitive advantage** results when a firm has the ability to perform the required activities at a collectively lower cost than rivals or to perform some activities in unique ways that create non/price buyer value and support a premium price. Some competitive advantages mat arise from location as well, other from the overalla global network and the way it is managed. See Porter, Michael.p.316 IT for example, may reduce time to market by linking orders to production, and improve internal coordination.

40 Chong, Alberto and Micco, Alejandro. "On Information Technology and Competitiveness in Latin America". IABD. Paper prepared for the seminar "towards Competitiveness: the institutional Path. Santiago, Chile, 2001.p.9

41 Ernst Dieter. *Global.* P.5.15

42 *ibid*

43 Chong, Alberto. P. 22

44 **Economic efficiency,** as defined by the UN, it refers to a situation in which participants in an economy make economic choices that accurately reflect the relative scarcities of goods, services and resources available for consumption and production. In general efficiency both maximizes society's welfare and supports and strengthen economic growth and development. In UNCTAD."Transnational Corporations, Market Structure and Competition Policy". World Investment Report 1997. Part Two. 1998. p. 124.

45 According to the UN definition, **Competition in a Market** refers to rivalry among the sellers and among the buyers of a good or service, the buyers and sellers that can enter the contest constitute the market. UNCTAD, 1998.p.125.16

Because competition is such a powerful economic force,[46] firms must respond to competitive shifts by developing new, more complex strategies designed to pre-empt their competitor's moves.[47] Today, for example, global competition is forcing firms not only to be present in all major growth markets, but also to organize and integrate their activities on a worldwide scale, so as to exploit and coordinate across location links.[48]

To cope with the growing complexity of competition, a firm's global strategy must aim to gain a comparative locational advantage as well as to maximize the firms' competitive advantages.[49]

Even when firms have acquired assets and developed the appropriate capabilities to combine location, product differentiation, competitive price and speed-to-market tactics, they may not be able to succeed on their own. Because no firm can generate the entire gamut of capabilities necessary to cope with the requirements of global competition, competitive success today lies on the ability to selectively source specialized capabilities *outside* the firm [50] . Outsourcing can range from simple contract assembly to quite sophisticated design capabilities.[51] In addition, global competition often requires further organizational changes, such as the shift from individual to more collective forms of organization. As Dieter Ernst has described it, firms must move from the MNC form of a multidivisional (M-form) functional hierarchy to that of a network flagship model [52] "

2.1.3 Global Production Networks

Dieter Ernst's network flagship model is comprised of Global Production Networks (GPN) that serve to coordinate both intra-and inter-firm transactions. A GPN links the flagship together with its own subsidiaries, affiliates and its joint ventures as well as with its subcontractors, suppliers, service providers, and partners in strategic alliances [53] .

The primary goal of a GPN is to provide the flagship [54] with fast, low-cost access to knowledge, as well as resources capabilities that complement the networks' core competencies. The benefits include a reduction in transaction costs as well as the

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46 Porter, Michael. Competing across Locations. In the Competitiveness of Locations p.309

47 Ernst. Global. P.6

48 *Ibid*.

49 Porter. p.16

50 Ernst.p.6

51 *Ibid*..

MNCs M-form: as described by Williamson, it refers to a way of organization in which the structure of the firm extend the asset management from a domestic base to include foreign operations. That is a strategy for decomposing complex business structures into semi autonomous operating units applied to the management of foreign subsidiaries. See Williamson. p. 291.

52 Ernst. p.6

Strategic alliances, as defined by Benjamin Gomes-Casseres, are collaborative strategies in international business or Inter-firm relationships that may or may not involve mutual dependence and shared decision making between the two separate firms Concept drawn from Gomes-Casseres Benjamin. *Managing International Alliances: ConceptualFramewor*k. Harvard Business School. May 14. 1993 p.1

53 Ernst. p.6

54 The flagship provides, as well, strategic and organizational leadership beyond the resources that lie directly under its management control. See Ernst. p.10.

enhanced learning that is associated with the dissemination, exchange, and outsourcing of knowledge and complementary capabilities".[55]
There are two main characteristics of Global Production Networks that influence the scope for international knowledge diffusion. The first is that GPNs are structured in a series of hierarchical layers ranging from the network flagships that dominate the networks to an array of specialized local suppliers. Because GPNs encompasses both intra and inter firm linkages, and integrate a network of participants differing in both their position and their access to the network, the participants face very different challenges and also find different opportunities for the GPNs.[56]
The second feature is the dispersion of the value chain activities combined with spatial concentration. As noted by Ernst, "much of the recent cross-border extension of manufacturing and services has been concentrated on a growing but still limited number of specialized lower-cost clusters".[57] including Southeast Asian countries, China as well as Eastern Europe, Russia, Brazil and Mexico. Because economic activities are located in clusters, there are new opportunities for knowledge diffusion to local suppliers, and thus new opportunities for local capability formation.[58] Thus, even with cross-border dispersion, economies of agglomeration continue to matter. [59] Moreover, although some value chain activities are dispersed to reap the benefits of outsourcing, the activities that are most important for competing in each major product line or businesses remain concentrated [60].These outsourcing patterns matter because they determine the type and extent of knowledge that is transferred.

2.1.3.1 Technology and Knowledge Transfer

Global Production Networks act as powerful carriers of knowledge. GPNs need to transfer technological and managerial knowledge to local suppliers in order to upgrade their suppliers' technical and managerial skills. Only then, can these suppliers meet the flagships' requirements for technical quality.

55 *Ibid* p.7
56 The strategy of the flagship company thus directly affects, the growth the strategic direction and the strategic
position of lower-end participants, like specialized suppliers and contractors. *Ibid.*p 9-10.
57 *Ibid* p. 8.
58 Each cluster faces different opportunities and constraints *Ibi*d. p.9

Appendix C

Knowledge Reuse: The Roles of Human and Technical Intermediaries

A Thesis Submitted to the Faculty of the Graduate School of Arts and Sciences of Georgetown University in partial fulfillment of the requirements for the degree of Master of Arts in Comm, Culture and Technology; By William J. Fischer, B.A. Washington, DC April 24, 2001

Chapter 1: Introduction

It has been said that knowledge management has entered a third phase in its development. Advances in information technologies inspired the first stage in the 1990's. Organizations, particularly large consulting firms, deployed various

Internet based technologies to enhance knowledge coordination and sharing. The second stage recognized the importance of human and cultural elements. This phase acknowledged that a "if you build it, they will come" approach to knowledge management led to failed implementations unless human factors were sufficiently taken into account (Koenig). The third and present stage of knowledge management involves the "awareness of the importance of content— and, in particular, an awareness of the importance of the retrievability and therefore of the arrangement, description and structure of that content" (Koenig).

> Today, knowledge management practitioners and technology vendors are increasingly focused on how to best structure and index a body of documents to facilitate simple search and retrieval (Koenig).

A review of knowledge management literature reveals that information technology, people and culture all play vital roles in knowledge management processes. Indeed, a key question for today's knowledge management practitioner is how to integrate information technology, including knowledge repositories and content management tools, people and culture to enhance knowledge reuse processes within organizations. However, organizations often deploy knowledge repositories without careful consideration of business, culture and people issues. As a result, knowledge reuser needs can go unmet. Lynne A. Markus' theory of knowledge reusability outlines the conditions under which successful knowledge reuse is likely to occur. More importantly, it delineates what must be done with respect to organizational roles and culture to make knowledge repositories more useful for knowledge reuse processes. **Her theory emphasizes the use of human and technical intermediaries as well as organizational incentives to adequately address different knowledge reuser requirements.**

The purpose of this research paper is to explore Markus' theory of knowledge reusability by examining the roles of human and technical intermediaries within a particular organizational setting. Based on a pilot case study conducted at the

World Bank, the major contributions of this paper to knowledge management literature are to (1) clarify and refine Markus' theory of knowledge reusability,& (2) offer preliminary recommendations on how organizations can exploit human and technical intermediary capabilities to

enhance knowledge reuse processes. These initial recommendations include the following:
1. Establish technical intermediaries, such as knowledge repositories, for specific business needs.
2. Appoint and reward human intermediaries who thoroughly understand user business needs to administer technical intermediaries, even if only for a part-time basis.
3. Use emerging metadata technologies to assist human intermediaries with content management.
Future case study research will validate whether the initial findings and recommendations of this research paper are applicable to other World Bank business units and organizations in other industries.

Overview of this Research Paper

This research paper is presented in ten (10) chapters. In chapters 2 through 6, the relevant literature is reviewed in order to provide the theoretical and conceptual foundation for this research paper. Chapter 7 details the research methods employed for this study. Chapters 8 and 9 respectively present and discuss the findings of the research study. Finally, chapter 10 presents the conclusions of this research paper and offers recommendations for future research.
However due to reasons of Focus (our own research is related to Knowledge and HR)not all the chapters are present in this thesis

Chapter 2: An Overview of Knowledge Management
Several noted academics point out that the concept of knowledge management is really nothing new. Family business owners, master craftsmen and front line workers have exchanged ideas and know-how for hundreds of years (Hansen, Nohria and Tierney 106). Indeed, philosophers, management and organizational theorists have long debated how individuals, communities and nations define, create and share knowledge (Nonaka and Takeuchi 21) .
Despite some who characterize it as a “misfired fad” (Hagen and Manning 1), knowledge management continues to attract sustained interest from a variety of organizations in both private and public sectors. The large number of business application vendors touting their knowledge management solutions (Hagen and Manning 1), increasing attendance at trade shows and conferences (Knowledge Management: Four Obstacles to Overcome 3) and the federal government’s recent pledge to increase spending on knowledge management solutions (Balluck E1) all demonstrate the resurgent popularity of knowledge management.
While contemporary leaders in developing robust knowledge management programs such as the World Bank abound, numerous academics, business professionals and industry analysts nevertheless observe an increasing number of troubled or failed knowledge management initiatives. Indeed, the American Productivity & Quality Center (“APQC”) has conducted several studies of knowledge management and found that most programs are in danger of getting stuck in pilot phase (Knowledge Management: Four Obstacles to Overcome 3).

A review of the literature reveals numerous reasons why knowledge management initiatives prosper or fail. Before examining these reasons, it is critical to first establish the core concepts underlying contemporary knowledge management. This chapter thus begins with a theoretical overview of what constitutes knowledge, a definition of knowledge and different knowledge types and a clarification of the practice of knowledge management itself.

The Study of Knowledge

The study of knowledge extends back to the ancient philosophers and is characterized by diverse answers to the question of, "What is knowledge?" (Grover and Davenport 5-21; Nonaka and Takeuchi 21). Nonaka and Takeuchi's The Knowledge Creating Company succinctly traces these divergent Western and Eastern epistemological traditions from the ancient Greek period to contemporary management science.

Nonaka and Takeuchi identify two, fundamentally opposed traditions of knowledge in Western philosophy. Proponents of rationalism such as Plato assert "that true knowledge is not the product of sensory experience but some ideal mental process" (21). According to this view, knowledge does not need to be justified by sensory experience; rather, it can be acquired deductively by appealing to mental constructs such as concepts, laws or theories (20-1). Empiricism, on the other hand, contends that the only source of knowledge is sensory experience; for empiricists such as Aristotle, knowledge is obtained inductively from particular sensory experiences (21).

René Descartes perpetuated the rationalist view of knowledge. Descartes argued that true knowledge about external things could be obtained only by the mind, and not by the senses (24). More importantly, he made the crucial distinction that the "thinking self" is independent of body or matter, which became known as the Cartesian dualism of mind and body (24). Various twentieth century Western philosophers have offered competing reconciliations of the Cartesian split by suggesting some form of interaction between the self and the outside world in seeking knowledge (24-5).

The Cartesian dualism prevalent in Western philosophy contrasts sharply with the Japanese intellectual tradition. According to Nonaka and Takeuchi, the Japanese focus on mind-body unity implies that knowledge is the wisdom acquired from the perspective of the entire personality; from personal and physical experience and not indirect, intellectual abstraction (29). Japanese management's emphasis on action directly reflects the Japanese intellectual tradition favoring direct personal experience over abstract theorizing (30-1). Although contemporary Western philosophy began to acknowledge the Japanese intellectual tradition, the Cartesia n split persisted through western economics and management science, including the scientific and humanistic approaches to western management studies in the 1960's (Nonaka and Takeuchi 32, 35). The scientific approach to business strategy emphasized logical and analytical thinking at the top of the organization and excluded less quantifiable human factors such as experiences, whereas the humanistic approach, which promoted the sharing of values as an integral component of the "corporate culture," neglected the potential for human beings to create, and not merely

passively process information and knowledge (Nonaka and Takeuchi 41-2). New attempts at marrying the scientific and humanistic views of knowledge

emerged in the 1980's. Key among them was Peter Drucker's work on "the knowledge society". In his book Post-Capitalist Society, Drucker hypothesized that knowledge workers play a central role in a society where knowledge is and will be the basic economic resource.[2] The most important challenge for every organization in the knowledge society is to systematically manage change by abandoning obsolete knowledge and learning to create new knowledge (Nonaka and Takeuchi 43).Like Peter Drucker, organizational learning theorists such as Peter Senge focused on the need for organizations to change continuously in an era defined by rapid economic and technological change (Nonaka and Takeuchi 44). In The Fifth Discipline: The Art and Practice of the Learning Organization, Senge maintains that successful organizations inculcate learning at all levels of the organization; however, he finds that inherent "learning disabilities" prevent them from achieving this goal (4, 18). [3] He offers five disciplines to help organizations overcome these learning disabilities and build a learning organization. Senge identifies systems thinking as the most important discipline, one that integrates all others "into a coherent body of theory and practice.[4] " Nonaka and Takeuchi assert that Senge's integration of theory and practice or fusing reason and intuition in learning organizations reflects an attempt to overcome the Cartesian split between mind and body. However, they fault Senge and other organizational theorists for rarely mentioning the word "knowledge" in their work and for failing to conceive an idea of knowledge creation (45).

Nonaka and Takeuchi close their analysis of Western management science by assessing the significance of the "resource-based" approach to competitive business strategy. Resource-based theorists such as Hamel, Prahalad, Stalk, Evans and Shuman contend that sustainable competitive advantage in the 1990's is found in competencies, capabilities, skills and strategic assets (46). Resource-based theorists generally believe that competitive advantage is to be found in resources and skills inside as opposed to outside the company (48).

Despite their concern with organizational skills and the role of top management as a key player, resource-based theorists vaguely acknowledge the role of knowledge in creating core capacities and capabilities (Nonaka and Takeuchi 48).

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1 Frederick R. Taylor founded scientific management as an attempt to enhance production efficiency by converting workers' experiences and skills into objective and scientific knowledge. In the 1920's and 30's, George Elton Mayo spearheaded the creation of human relations theory, which focused on the social factors, such as interpersonal relations, that influenced the creation of knowledge and hence improved productivity in the organization. Mayo suggested that managers utilize "social human skills" to encourage interpersonal communication within formal and informal work groups in the organization (Nonaka and Takeuchi 41-2).

2 See Drucker, P. Post-Capitalist Society (Oxford 1993) 5 qtd. in Nonaka and Takeuchi: 43

3 For descriptions of these learning disabilities, see Senge 17-26.

4 On page 12, Senge outlines the other disciplines: building shared vision fosters a commitment to the long term; mental models focus on the openness needed to unearth shortcomings in our present ways of seeing the world; team learning develops the skills of groups of people to look for the larger picture that lies beyond individual perspectives; and, personal mastery fosters the personal motivation continually learn how our actions affect our world.

Accordingly, the knowledge-based perspective of the firm promulgated by Nonaka and Takeuchi, Grant and others builds upon the resource-based theory of the firm by emphasizing the importance of knowledge-based assets (Alavi and Leidner 108). This perspective stipulates that competitive advantage is a function of the firm's ability to effectively apply existing knowledge to create new knowledge and to take action (Alavi and Leidner 108).
Today, management and organizational literature primarily emphasize this knowledge-based view of the firm (Grover and Davenport 5-21)

Data, Information and Knowledge

Research found in knowledge management literature reveals a hierarchical relationship between data, information and knowledge. Data are a set of raw numbers, objective facts or statistics about events, whereas information is processed data put in the form of audible or visible messages such as text, graphics, words or other symbolic forms. Informa tion then becomes knowledge once it is processed and put into context by individuals (Alavi and Leidner 109; Davenport and Prusak 2-5; Grover and Davenport 5; Nonaka and Takeuchi 58). Noted researchers in knowledge management further illustrate the subtle differences between data, information and knowledge. Richard McDermott's analysis focuses on the human, reflective aspect of knowledge:

> Knowledge is the residue of thinking…It comes from experience that we have reflected on, made sense of, tested against other's experience. It is experience that is informed by theory, facts, and understanding…Knowing is a human act, whereas information is an object that can be filed, stored, and moved around. Knowledge is a product of thinking, created in the present moment, whereas information is fully made and can sit in storage. (103-117)

Thomas Davenport and Laurence Prusak's Working Knowledge builds on McDermott's analysis by highlighting the importance of knowledge for taking action:

> 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. It originates and is applied in the minds of knowers (5).

Davenport and Prusak contend that unlike data or information, knowledge leads to decision and actions (6).
Alavi and Leidner offer a more concise definition that neatly captures the action-oriented nature of knowledge. They draw on the work of G. Huber and Nonaka and Takeuchi to define knowledge as "a justified belief that increases an entity's capacity for effective action" (109). The remainder of this research paper will rely on this succinct description as a working definition of knowledge.

Explicit and Tacit Knowledge

Knowledge management research credits Michael Polanyi for first distinguishing between two types of knowledge (Davenport and Prusak 71; Grover and Davenport 5-21; Nonaka and Takeuchi 59). *Tacit* knowledge is personal, context-specific, embedded in the human brain and therefore difficult to formalize and communicate. Tacit knowledge includes both cognitive (mental models, perspectives, beliefs, values) and technical (know-how, crafts and skills) components. Conversely, *explicit* knowledge refers to knowledge that can be expressed in words and numbers and can be

readily transmitted between individuals in formal, systematic language. Examples of explicit knowledge include data, scientific formulae, specifications, policies, procedures and manuals (Alavi and Leidner 110; Grover and Davenport 5-21; Lee 406; Nonaka and Konno 39; Nonaka and Takeuchi 59-60).

Varun Grover and Thomas Davenport credit Nonaka and Takeuchi for applying the tacit/explicit knowledge distinction to business and knowledge management (5-21). Nonaka and Takeuchi argue that western management tends to concentrate on managing explicit knowledge (a view also shared by Grover and Davenport) whereas Japanese managers focus on creating tacit knowledge (Grover and Davenport 5-21; Nonaka and Takeuchi 9). To understand the success of Japanese firms, Western management needs to move beyond the thinking that knowledge can be acquired, taught and trained through manuals (e.g. explicit knowledge) and pay more attention to the subjective insights, intuitions and hunches gained through experiences (e.g. tacit knowledge) (Nonaka and Takeuchi 11). Nonaka and Takeuchi's primary contribution to knowledge management literature is a theory that outlines how individuals can convert tacit knowledge to explicit knowledge.

Alavi and Leidner suggest that understanding different knowledge types is important "because theoretical developments in the knowledge management area are influenced by the distinctions among the different types of knowledge" (112).

The next section of this chapter thus illustrates how a strategic focus on different knowledge types shapes a variety of knowledge management initiatives.

Knowledge Management and Knowledge Management Projects

Research found in the literature defines knowledge management as the management of collective knowledge in order to help organizations take action, compete more effectively and achieve its goals (Alavi and Leidner 113; Davenport, De Long and Beers 89; Grover and Davenport 5-21; Van Den Hoven 81).

Knowledge management emerged as a conscious practice in the 1990's when noted academics and chief executives started talking about the importance of managing knowledge with particular urgency. Business executives realized that intellectual assets were just as or more important than traditional resources such as land, machines or capital (Davenport and Prusak 12; Earl 215; Hansen, Nohria and Tierney 106). This realization coincided with the rise of networked computers, which made it easier and less costly to codify, store and share information than ever before (Hansen, Nohria and Tierney 106; Koenig). Consulting firms such as Arthur Anderson and Ernst & Young were among the first to put forward knowledge management strategies for what knowledge to pursue and how to capture and share it (Garvin 55; Hansen, Nohria and Tierney 106-7).

A study in the 1990's found that these and other consulting firms pursue two different knowledge management strategies. The codification strategy focuses on developing electronic document systems that codify, store, disseminate and allow the reuse of knowledge "objects" that have been extracted and made independent from individuals (Hansen, Nohria and Tierney 108-9).

Codification strategies are typical of firms, such as Arthur Anderson, where the efficient reuse of codified knowledge is critical for executing repetitive tasks and solving similar problems (110).
By contrast, the personalization strategy focuses on developing networks for connecting people so that tacit knowledge can be shared. Personalization strategies are characteristic of firms such as McKinsey & Company where tacit knowledge transferred in brainstorming sessions and one-to-one conversations enables consultants to offer customized solutions to strategic problems(108-10). Morten T. Hansen et al. note the deleterious consequences of choosing the wrong knowledge management strategy:

> A company's choice of strategy is far from arbitrary – it depends on the way the company serves its clients, the economics of the business, and the people it hires. Emphasizing the wrong strategy or trying to pursue both at the same time can, as consulting firms have found, quickly undermine a business. (107)

Based on observations of consulting companies as well as other industries, Hansen concludes, "that the choice between codification and personalization is the central one facing virtually all companies in the area of knowledge management" (107).
Thomas Davenport, David De Long and Michael Beers' study of twenty-four companies in the late 1990's shows that most knowledge management initiatives have one of four primary objectives: (1) to create knowledge repositories that store external knowledge, such as competitive intelligence, structured internal knowledge, such as research reports, techniques and methods, and informal internal knowledge, such as discussion databases; (2) to improve knowledge access and facilitate its transfer among individuals by connecting them through expert networks, (3) to enhance knowledge conducive environments by changing organizational norms and processes; and, (4) to recognize knowledge as an asset like other traditional assets on a balance sheet.

Successful knowledge management projects are evidenced by (1) growth in resources attached to the projects, including people and money; (2) increases in the number of documents in repositories or participants in discussion databases, (3) institutional and not just individual support for the project, and (4) evidence of a financial return (97).
Of the twenty- four knowledge management projects they studied, Davenport et al. classified eighteen as successful and five as unsuccessful. The knowledge management projects deemed successful possessed virtually all success indicators (as outlined in the previous paragraph). In a few cases, success in knowledge management dramatically transformed organizations. Knowledge management in one large consulting firm dramatically improved its financial results, increased its win rate in proposals to clients and achieved a higher growth rate than other large consulting firms.

However, in most instances, Davenport et al. found that **knowledge management led to marginal improvements in operational processes or functions**. In these cases, knowledge management improved new product development, customer support, education and training, software development, patent management and other areas (98-99).
Unsuccessful projects had few or none of success indicators. These projects had to scrounge for resources, struggle to get employees to contribute to

repositories or use discussion databases, and were a long way off in saving money for their firm (98).

Knowledge management initiatives fail for several reasons. First and foremost is the lack of a business purpose. Nancy Dixon argues that too many companies treat knowledge management as an end in itself. "The goal is not to make knowledge management happen," says Dixon, "the goal is to deal with the organization's most pressing issues and to use KM where it's appropriate to do so" (qtd. in Knowledge Management: Four Obstacles to Overcome 3). Thomas Stewart reinforces Dixon's point:

> Knowledge management is all over the map: Building databases, measuring intellectual capital, establishing corporate libraries, building intranets, sharing best practices, installing groupware, leading training programs, leading cultural change, fostering collaboration, creating virtual organizations - - all of these are knowledge management, and every functional and staff leader can lay claim to it. But no one claims the big question: Why? ("The Case")

Failed knowledge management projects result from other factors as well: the application of universal, out of the box solutions to specific problems (Knowledge Management: Four Obstacles to Overcome 3); Hagen and Manning 1); stove-piped organizational structures and processes that reinforce isolation and inhibit cooperation (Hagen and Manning 1); poor planning and inadequate resources; and, a lack of accountability (Knowledge Management: Four Obstacles to Overcome 3).

Andrew Michuda, the chief executive of a knowledge management software company, aptly summarizes how knowledge management initiatives break down:

> KM hits a wall when it is generically applied. You need the richness of human interaction with the efficiencies of technology, focused on a knowledge-intensive business application. Knowledge management is much more effective if its not a stand-alone button on somebody's PC but is integrated into a key business process. (qtd. in Stewart "The Case")

Summary of Knowledge Management

A review of the literature reveals that the concepts underlying contemporary knowledge management are nothing new. The present day study and practice of how individuals and organizations create, manage and apply explicit and tacit knowledge naturally extends a tradition started by ancient Greek philosophers and continued by 20 th Century Western and Eastern management theorists. The emergence of the knowledge-based view of the firm coupled with revolutionary advances in information and communication technologies in the 1990's brought renewed attention to capturing and leveraging data, information and knowledge assets. Organizations have since devoted considerable resources

to knowledge management initiatives in anticipation of enjoying several benefits, including an improved ability to innovate and coordinate organizational efforts, the rapid commercialization of new products, and the ability to anticipate surprises, respond to market changes and reduce the redundancy of information and knowledge(Gold, Malhotra & Segars 185-214).

Knowledge management research shows that the success and failure of

knowledge management initiatives are a function of numerous factors, including, but not limited to, the appropriate application of management strategies (codification vs. personalization) to business processes, technologies, knowledge-friendly cultures, motivational practices and

clearly articulated senior management support (Davenport and Prusak 91-103). In fact, a knowledge infrastructure consisting of technology, organizational structure and culture along with a knowledge process architecture of acquisition, conversion, application and protection are essential organizational capabilities or preconditions for knowledge management (Gold, Malhotra & Segars 185-214).

The next three chapters analyze each of these components, beginning with the knowledge management process.

Chapter 3: Knowledge Management Processes

Noted researchers agree that knowledge management consists of basic, interrelated processes that differ from traditional operational or administrative work processes (Alavi and Leidner 114; Garvin 56; Grover & Davenport 5-21).

Unlike operational or administrative work where tangible inputs are acted on in some predictable, structured way and converted into outputs, the inputs and outputs of knowledge work processes are less tangible and discrete – "there are no predetermined task sequences that, if executed, guarantee the desired outcome" (Davenport, Jarvenpaa and Beers 55). Alavi and Leidner comment on the inherent complexity of knowledge management processes:

> …knowledge management consists of a dynamic and continuous set of processes and practices embedded in individuals, as well as in groups and physical structures. At any point in time and in any part of a given organization, individuals and groups may be engaged in several different aspects and processes of knowledge management. Thus, knowledge management is not a discrete, independent, and monolithic organizational phenomenon. (123)

Based on a study of thirty organizations, Davenport and colleagues observed five knowledge work processes distinct from administrative and operational work- flow designs: acquiring, creating, packaging, applying, and reusing knowledge (57). The majority of contributions to the literature identify similar knowledge management processes, albeit with slightly different labels: content generation, organization, development and distribution (Garvin 56-57); knowledge generation, codification (the conversion of knowledge into accessible and applicable forms) and transfer (Grove and Davenport 5-21); knowledge acquisition, conversion, application and protection (Gold et al. 185-214); and, knowledge creation, storage/retrieval, transfer, and application (Alavi and Leidner 114).

A review of these various contributions suggests four overarching knowledge management processes: knowledge creation, codification, transfer and application. This chapter briefly outlines these core processes and related sub processes, beginning with knowledge creation, the foundation of all knowledge management processes.

Knowledge Creation

Knowledge management processes start with knowledge creation, also referred to as generation or acquisition. Nonaka and Takeuchi's The Knowledge Creating Company and Nonaka and Konno's The Concept of "Ba": Building a Foundation for Knowledge Creation illustrate the knowledge creation process. Knowledge creation is a spiraling process of interactions between explicit and tacit knowledge that transpires in four conversion modes: (1) socialization, (2) externalization, (3) combination and

(4) internalization (Nonaka and Takeuchi 62). Nonaka and Konno introduce the Japanese concept of "ba", roughly translated into the English word "place" and defined as "a shared space for emerging relationships," as the foundation for knowledge creation (37-8). They outline four types of ba that correspond to four modes outlined above. The socialization mode involves the conversion of tacit knowledge to new tacit knowledge through social interactions and shared experiences among organizational members (Alavi and Leidner 116). Nonaka and Konno use the term socialization "to emphasize that tacit knowledge is exchanged through joint activities – such as being together, spending time, living in the same environment – rather than through written or verbal instructions" (40). Originating ba is the primary ba which instigates the knowledge creation process and is the "world" where individuals share feelings, emotions, experiences and mental models and (43-44).

Externalization refers to converting tacit knowledge to new explicit knowledge that can be understood by others through the use of metaphors, analogies,concepts, hypothesis or models (Nonaka and Konno 41-42; Nonaka and Takeuchi 64). Interacting ba represents the externalization phase and is the place where tacit knowledge is made explicit through dialogue. Interacting ba is present when individuals convert their mental models and skills to create new, commonly understood terms, concepts, meaning and value(Nonaka & Konno 44)

Combination involves the creation of new explicit knowledge by merging, categorizing, reclassifying and synthesizing existing explicit knowledge (Alavi and Leidner (116). Combination is comprised of three sub-processes: (1) capturing and integrating externalized knowledge (e.g. public data) from inside or outside the company; (2) transferring this knowledge through presentations or meetings and; (3) editing or processing explicit knowledge to make it more usable (e.g., documents such as plans, reports, market data) (Nonaka and Takeuchi 42).

Cyber ba represents the combination phase and is a place of interaction in a virtual world. Information technology supported collaborative environments such as groupware, on- line networks and databases facilitate cyber ba and the combination phase (44).

The final conversion phase, internalization, refers to the creation of new, organizational tacit knowledge from explicit knowledge. Learning by doing, training programs and simulation enable "the individual to access the knowledge realm of the group and the entire organization" (Nonaka and Takeuchi 69).

Exercising ba supports the internalization phase by stressing learning through continuous, active self-refinement (Nonaka and Konno 42, 45). Organizational knowledge is created when the interaction between explicit and tacit knowledge at these conversion modes produces new knowledge that spirals from the individual to group to organizational and inter-organizational levels. For organizational knowledge creation to take place, individual tacit knowledge must be *socialized* with other organizational members, thereby starting a new spiral of knowledge creation (Nonaka and Takeuchi 72-73).

Knowledge Codification

Knowledge codification follows knowledge creation as the next knowledge management process. Unlike the combination phase of the knowledge creation process, where the goal is to create new explicit knowledge, the primary objective of knowledge codification is to make knowledge more accessible and useful. Davenport and Prusak explain:

> the aim of codification is to put organizational knowledge into a form that makes it accessible to those who need it; it literally turns knowledge into a code (though not necessarily a computer code) to make it as organized, explicit, portable, and easy to understand as possible. (68)

Gold et al. add that "conversion-oriented processes are those oriented toward making existing knowledge useful; some of the processes that enable knowledge conversion are a firm's ability to organize, integrate, combine, structure, coordinate or distribute knowledge" (185-214).

Successful codification requires that organizations evaluate the usefulness and importance of rich, tacit knowledge versus rules-based, explicit knowledge. Above and beyond just making explicit or tacit knowledge generally available, organizations must specify what goals that codified knowledge will serve. Honda, for instance, preserves and keeps track of failed development ideas because it recognizes that they may be useful in the future. Dow Chemical continually evaluates patents to determine what can be used, which might be sold and which should be abandoned (Davenport and Prusak 69-70, 85).

Maintaining the contextual relevance of appropriate sources of knowledge represents the major hurdle in the codification process (Davenport and Prusak 68-69).

While documents or databases can accurately represent rules based, schematic, explicit knowledge, it is infinitely more difficult to capture the rich, tacit, intuitive knowledge that has the greatest potential value to an organization. As such, the codification process for the richest, tacit knowledge is "generally limited to locating someone with the knowledge, pointing the seeker to it, and
encouraging them to interact" (Davenport and Prusak 69-72).

Knowledge Transfer

Researchers demarcate knowledge transfer as a separate knowledge management process even though it is inherent to Nonaka and Takeuchi's knowledge creation process. Davenport and Prusak frame the knowledge transfer process in terms of two actions: transmission (sending or presenting knowledge to a potential recipient) and absorption by that person or group. Transmission and absorption together have no useful value unless the knowledge transfer improves an organization's ability to do things such as develop new products or change behaviors (Davenport and Prusak 101). Knowledge transfer between individuals, from individuals to groups, between groups, across groups and from the group to the organization transpires in informal or formal, personal and impersonal channels(Alavi & Leidner 119-120).

Water cooler conversations, apprenticeships, mentoring and storytelling exemplify informal, personal knowledge transfer mechanisms whereas knowledge forums and training sessions embody more formal, impersonal knowledge transfer methods (Alavi and Leidner 121; Davenport and Prusak 90-2; Swap et al. 95-114).

Knowledge Application

Knowledge application, a process oriented toward the actual use of knowledge, is the fourth and final knowledge management process (Gold 185-214).

Some maintain that the source of competitive advantage resides in the application rather than the mere possession of knowledge(Alavi & Leidner 122). Alavi and Leidner detail three mechanisms for knowledge application. First, non-specialists apply specialists' explicit knowledge represented by directives such as rules, standards, procedures and instructions. Second, organizational routines such as coordination patterns, interaction protocols and process specifications enable individuals to apply their specialized knowledge without having to articulate it to others. Finally, self-contained task teams form to apply individual specialized knowledge to unique problems (122).

Summary of Knowledge Management Processes

Differences exist between structured and standardized operational or administrative work processes and less uniform, sequential or measurable knowledge work processes. Four overarching processes comprise knowledge management: (1) knowledge creation, itself a spiraling process defined by the conversion of individual tacit to new tacit knowledge (socialization), tacit to new explicit knowledge (externalization), explicit to new explicit knowledge (combination) and explicit to new organizational tacit knowledge (internalization); (2) knowledge codification, (3) knowledge transfer; and, (4) knowledge application.

A major challenge for knowledge management practitioners is how to enhance these complex, fluid, and seemingly intangible knowledge processes in organizations. Information technology, organizational structure and culture are commonly seen as mediating "artifacts" that enable underlying knowledge management processes in organizations (Nidumolu, Subramani and Aldrich 115-150).

The next chapter will assess the extent to which information and communication technologies contribute to this effort.

Chapter 4: Knowledge Management Systems

Continuing advances in information and communication technologies promise faster, cheaper and broader access to information and means of communication than previous information systems and greater possibilities for individuals and organizations to create and share knowledge (Alavi and Leidner 115; Gold 185-214; Jackson 402; Walsham 599). In fact, it was the introduction of new information and communication technologies such as the world wide web that inspired organizations to invest in knowledge management initiatives in the 1990's (Davenport and Prusak 123; Garvin 58; McDermott 103-117; Walsham 599). Research found in the literature identifies knowledge management systems as integral tools for facilitating knowledge creation (Gold et al. 185-214), codification and transfer (Davenport and Prusak 125) and application (Alavi and Leidner 114).[5] Alavi and Leidner aptly summarize the importance of information technology to knowledge management processes:

…the application of information technologies can create an infrastructure and environment that contribute to organizational knowledge management by actualizing, supporting,

augmenting and reinforcing knowledge processes at a deep level through enhancing their underlying dynamics, scope, timing and overall synergy. (124)

This chapter assesses the degree to which knowledge management systems enable knowledge creation, codification, transfer and application within and between organizations. It also uncovers some of the inherent limitations of knowledge management systems for supporting these processes and the resulting implications for knowledge management initiatives.

Knowledge Management Systems and Knowledge Creation

Groupware, intranets, e- mail, expertise location, videoconferencing, on-line discussion and newsgroup applications are essential knowledge management systems that support knowledge creation. Lotus Notes is an example of groupware that enables geographically dispersed individuals to conduct meetings, listen to presentations, have online discussions and exchange documents.[6] It promotes socialization and externalization, and thus knowledge creation, by providing a synthetic forum where group members can express individual beliefs, share experiences and form shared mental models (Marwick 814-830). Alavi and Leidner observe that Intranets also play a vital role in knowledge creation:

Intranets enable exposure to greater amounts of on-line organizational information, both horizontally and vertically, than may previously had been the case. As the level of information exposure increases, the internalization mode of knowledge creation, wherein individuals make observations and interpretations that result in new individual tacit knowledge, may increase. (117)

Smart software tutors or online learning and distance education applications also facilitate internalization by encouraging "learning by doing" (117). Marwick claims that "the phase of knowledge transformation best supported by IT is combination, because it deals with explicit knowledge" (814-830). Indeed, a majority of IT research found in the literature emphasizes the role of knowledge management systems in combining or codifying explicit knowledge.

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[5] On page 114, Alavi and Leidner refer to information and communication technologies that support or enhance knowledge management processes as knowledge management systems. The remainder of this research paper will adopt Alavi and Leidner's definition of knowledge management systems for analyzing the application of information and communication technologies to knowledge management processes.

[6] Groupware is a broad category of application software that help individuals work together in groups or teams (Marwick 814-830).

Knowledge Management Systems and Knowledge Codification

Discussions of knowledge management systems that support knowledge codification typically begin with the concept of organizational memory. Organizational memory is defined as "the data or information that describes knowledge and can be used to generate new knowledge" (Hackbarth and Grover
22). Moreover, it "extends beyond the individual's memory to include other components such as organizational culture, transformations (production processes and work procedures), structure (formal organizational roles), ecology (physical work setting) and information archives (both internal and external to the organization).[7]

Knowledge repositories (often referred to as electronic databases), database management, document management, artificial intelligence and expert systems are critical knowledge management systems that store explicit organizational memory captured in written work documents (written reports, memos, etc.) as well as digital audio and video recordings (Alavi and Leidner 118; Cross and Baird 69-78; Hackbarth and Grover 24; Marwick 814-830). Documented organizational procedures and processes and knowledge about customers, projects, competition and industries typify explicit organizational memory contained in knowledge repositories (Alavi and Leidner 118-19).

In Managing Codified Knowledge, Michael Zack highlights two critical success factors for the effective use of explicit knowledge contained in knowledge repositories. First, knowledge repositories must accurately record specific contextual knowledge, or "the circumstances and intentions of knowledge development and application" (49). Organizations can disseminate explicit, factual knowledge by means of central electronic repositories when communities have a high degree of shared contextual knowledge (50).

Secondly, organizations must index their knowledge repositories using appropriate concepts and categories to provide individuals with meaningful access to content (Zack 49). Using information technologies such as the World Wide Web and groupware, firms can "capture and store units of knowledge in forms that assign various labels, categories and indexes to the input…that reflect the structure of the contextual knowledge and the content of the organization's factual knowledge (50).

Search engines, knowledge maps, taxonomy applications and portals are today's tools for generating indexes or metadata (knowledge about where the knowledge resides) and storing metadata of documents residing in knowledge repositories (Alavi and Leidner 121; Marwick 814-30). For example, text search engines build indexes of documents based on words contained in the indexed documents. Video and audio search systems also assist users in locating explicit knowledge captured in multimedia objects (Marwick 814-30). Knowledge maps and taxonomy tools enable users to

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[7] See Walsh, J.P., and Ungson, G.R., "Organizational Memory". Academy of Management Review (New York 1999) qtd. in Alavi and Leidner: 118

search by topic or keywords for documents arranged in hierarchically organized categories. These tools place documents into context, thus helping users assess their applicability (Marwick 814-30).

Finally, portals provide a centralized, convenient location for storing meta-data generated by text search engines, knowledge maps and taxonomies. Marwick predicts that portals will likely generate new kinds of meta-data, such as document summaries, as part of its indexing functionality. The automatic generation of document summaries is an active area of research that will hypothetically enable users to avoid reading documents that are irrelevant to their current tasks (Marwick 814-30).

Knowledge Management Systems and Knowledge Transfer

Intranets, electronic bulletin boards, discussion groups, expertise management tools and video technologies support knowledge transfer. They are especially useful for enabling geographically dispersed individuals to share knowledge with those existing outside of regular, everyday points of contact (Alavi and Leidner 121). For example, in 1995, the U.S. Army began to encourage newly appointed generals to use electronic communities as a way of accessing and sharing knowledge with globally distributed generals (Cross and Baird 69-78).

Corporate directories containing employee profiles, also referred to as expertise management tools, permit individuals to seek, locate and access experts who possess potentially useful knowledge. Hewlett Packard's web-based "Connext" system allows an HP employee "to search for an HP Labs expert who, for example, has a P.H.D. in electrical engineering, knows ISDN well, and lives in Germany" (Davenport and Prusak 124). Several expertise management applications are emerging that automatically build and update employee biographies (Rasmus).

Video technology also enhances knowledge transfer by transcending geographic boundaries. For example, British Petroleum makes offshore drilling knowledge available globally through desktop video conferencing technology that includes images of participants, windows of technical data, video clips of issues under consideration, specifications, contractual data and plans.[8]

Knowledge Management Systems and Knowledge Application

Intranets, workflow automation systems and rule-based expert systems support knowledge application by capturing, updating and making accessible organizational directives. Workflow automation systems and rule-based expert

systems are examples of IT applications that "reduce the need for communication and coordinatio n and enable more efficient use of organizational routines through timely and automatic routing of work-related documents, information, rules, and activities" (Alavi and Leidner 122).

Customer relationship management ("CRM") software applications exemplify work support systems that help organizations manage customer service relationships. CRM applications largely consist of databases that

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8 See Cranfield University "The Cranfield/Information Strategy Knowledge Survey: Europe's State of the Art in Knowledge Management". The Economist Group (1998) qtd. in Alavi and Leidner:121

describe relationships in sufficient detail so that management, salespeople, people providing service, and even customers can directly access information, match customer needs with product plans and offerings, remind customers of service requirements, know what other products customers had purchased, etc.9

Summary of Knowledge Management Systems

A review of the literature establishes that advances in information and communication greatly benefit knowledge management processes. Knowledge management systems such as groupware, knowledge repositories and databases, knowledge maps and taxonomy applications, electronic discussion boards, knowledge directories and workflow systems significantly enhance the potential for knowledge creation, codification, transfer and application in organizations. summarizes the knowledge management systems that facilitate each knowledge management process. Although knowledge management systems can enhance knowledge management processes, there are several limitations of knowledge management systems and knowledge repositories in particular. Research found in the literature suggests that (1) information and communication technologies are not *the* answer to improved knowledge management processes (Walsham 607), (2) extensive behavioral, cultural and organizational change are requisite for effective knowledge management (Davenport and Prusak 141-42) and, (3) a continuing emphasis on technology over other factors such as organizatio nal culture may undermine the staying power of knowledge management itself (Montano et al. 5).

Any consideration of the role of knowledge management systems must begin with the human element involved in knowledge management processes (Donahue; Jackson 406; Malhotra 11; McDermott 103-17; Walsham 609). However, Richard McDermott observes that most practitioners ignore this approach:

> The difficulty in most knowledge management effort lies in changing organizational culture and people's work habits. It lies in getting people to take the time to articulate and share the really good stuff. If a group of people don't already share knowledge, don't already have plenty of contact, don't already understand what insights and information will be useful to each other, information technology is not likely to create it. However, most KM efforts treat these cultural issues as secondary, implementation issues. They typically focus on information systems–identifying what information to capture, constructing taxonomies for organizing information, determining access, and so on. (103-17)

In the next chapter, this research paper explores the organizational structure and culture components that, in combination with knowledge management systems, play such important roles in knowledge management processes.

Chapter 5: Organizational Structure and Culture

Organizational structure and culture are two interrelated elements that greatly influence the success or failure of knowledge management initiatives. Organizational structure encompasses the formal and informal rules, policies, procedures, reward systems, incentive systems, work practices, roles, hierarchy of reporting relationships, and departmental units and boundaries that shape and are shaped by everyday tasks within the firm (Gold et al. 185-214; Orlikowski 243; Zack 55) Organizational culture includes the value and belief systems, norms, power relations and management philosophies that promote or inhibit knowledge management behavior (Davenport and Prusak; Gold et al. 185-214; Grover and Davenport 5-21;Orlikowski 246; Zack 55). The remainder of this chapter outlines how organizational structure and culture impact the practice of knowledge management in organizational settings.

Organizational Structure

*Organizational Structure*s. Although organizational structures intend to rationalize individual functions or units, they often inhibit collaboration and sharing of knowledge across internal organizational boundaries. Organizational structures should be designed for flexibility (as opposed to rigidity) in order to encourage sharing and collaboration across organizational boundaries (Gold, Malhotra and Segars 185-214).

Nonaka and Takeuchi propose an organizational structure, the hypertext organization, which synthesizes the efficiency and stability of bureaucratic infrastructures with the effectiveness and dynamism of project task forces. The hierarchical, bureaucratic component of the hypertext organization accumulates operational and systemic knowledge via internalization and combination, whereas the non-hierarchical project team unit generates conceptual and sympathized knowledge via externalization and socialization. [10] A knowledge base layer consisting of corporate vision, culture, HR or technology, captures and re-contextualizes these different knowledge contents into something meaningful for the organization at large. Consisting of three layers, the hypertext organization "has the organizational capability to convert continuously and dynamically the different knowledge contents generated by the bureaucracy and the project team" (Nonaka and Takeuchi 170).

In their 1999 article Communities of Practice: The Organizational Frontier, Etienne Wenger and William Snyder note the emergence of a new organizational form, communities of practice, which complement existing structures such as cross- functional project teams, customer or product-focused business units and work groups. They define communities of practice as "groups of people informally bound together by shared expertise and passion for a joint enterprise – engineers engaged in deep-water drilling…consultants who specialize in strategic human resources , strategic information technology or

[10] See page 71 of Nonaka and Takeuchi's The Knowledge Creating Company for a explanations of sympathized, conceptual, systemic and operational knowledge.

strategic marketing, or frontline managers in charge of check processing at a large commercial bank" (139). Unlike project teams that are formed by senior management to accomplish a specified task, bound by project milestones and goals and disband upon completion of the project, communities of practice are self-organized to build and exchange knowledge, bound by commitment and identification with the group's expertise and remain as long as there is interest in maintaining the group (141-42).

The output of knowledge generated by communities of practice has improved organizational performance for a diverse group of companies: an international bank, a major care manufacturer, and a U.S. government agency. Communities of practice drive strategy, generate new lines of business, solve problems, promote the spread of best practices, develop individual professional skills and help companies recruit and retain talent (Wenger et al., 140).

Wenger et al. find that communities of practice are not quite as prevalent in the business community, despite their proven value, for several reasons. Key among them are that the "organic, spontaneous, and informal nature of communities of practice make them resistant to supervision and interference" (140). Managers are able to overcome this "management paradox" and sustain communities of practice by (1) identifying potential communities of practice that enhance the company's strategic capabilities, (2) providing the infrastructure in the form of time, money, executive sponsorship and reward systems to support such communities, and (3) using non-traditional methods such as storytelling and anecdotal evidence to assess the value of the company's communities of practice (144-45).

Contemporary research regards communities of practice as the primary organizational unit for creating, capturing and distributing knowledge(Garvin 58; Grover and Davenport 5-21; McDermott 103-117; Walsham 601). Moreover, existing research recognizes that management must actively find nurture and support communities of practice (McDermott 103-117; Walsham 601-602). For example, McDermott suggests that managers must first identify the communities that care about particular topics and *then* bolster their ability to think, share and stay in touch with each other with the help of knowledge management systems (103-117).

***Organizational Role*s**. Recent literature has devoted considerable attention to different roles and responsibilities for mediating knowledge management processes. Davenport and Prusak suggest that organizations must create a set of roles and skills to do the work of capturing, distributing and using knowledge if knowledge management is to thrive. One such role is the knowledge project manager who focuses explicitly on knowledge creation, distribution and application in addition to typical project management functions such as developing project objectives, assembling and managing teams, determining and managing customer expectations, monitoring project budgets and schedules and identifying and resolving project problems. Another role is the Chief Knowledge Officer (CKO), a senior manager role responsible for building a knowledge culture, knowledge management infrastructure and making knowledge management initiatives pay off economically (107-115).

Nonaka and Takeuchi propose that middle managers, whom they refer to as knowledge engineers, serve as *the* crucial bridge between front- line employees immersed in the day-to-day details of particular technologies, products or markets and senior managers driven by grand concepts and visionary ideals (15). Middle managers mediate between the "what should be" mindset of top managers and the "what is" mindset of front- line employees by converting the tacit knowledge of both groups into explicit knowledge (i.e., externalization) and incorporating it into new technologies, products or systems (15, 154-55). Nonaka and Takeuchi cite the example of Ikuko Tanaka as a middle manager– knowledge engineer who mobilized team members in the Home Bakery development team to create knowledge not only for the team but for the company at large:

> (1) Tacit to tacit (socialization): she learned the tacit secrets of the head baker at Osaka International Hotel; (2) tacit to explicit (externalization): she translated these secrets into explicit knowledge so that the know-how could be communicated and. transmitted to her team members as well as to others at Mats ushita; (3) explicit to explicit (combination): the team standardized this knowledge, putting it together into a manual or workbook and embodying it in a product; and (4) explicit to tacit knowledge (internalization): Ikuko and her team members enriched their own tacit knowledge base through the experience of creating an innovative new product. (155)

Michael Zack offers another noteworthy analysis of knowledge managers or intermediaries. He observes that successful firms explicitly define and reward new roles that facilitate knowledge capture, refinement, retrieval, interpretation and use. The most important role is that of the subject matter expert.

The subject matter expert acts as both an editor by assuring the quality of content, and as a knowledge repository manager by assuring the quality of context through thoughtful abstracting and indexing. The subject matter expert role is largely a response to the complex nature of knowledge repositories:

> Knowledge repositories have a life cycle that firms mu st manage. Once created repositories tend to grow, reaching a point at which they begin to collapse under their own weight, requiring major reorganization. Their rejuvenation requires deleting obsolete content, archiving less active but potentially useful content, and reorganizing what remains. Content or topic areas may become fragmented or redundant. Reorganizing requires eliminating those redundancies, combining similar contributions, generalizing content for easier reapplication, and restructuring categories as needed. Successful knowledge management organizations proactively manage and reorganize their repositories as an ongoing activity rather than waiting for decline to set in before acting. (Zack 55)

Beyond organizational structure and roles, "effective knowledge creation, sharing, and leveraging requires an organizational climate and reward system that values and encourages cooperation, trust, learning, and innovation and provides incentives for engaging in those knowledge-based roles, activities, and processes" (55).

Wanda Orlikowski's study of a Lotus Notes implementation in a large organization underscores Zack's observation about the importance of incentives and reward systems. She documented the experience of a consulting firm to show that groupware technology does little to encourage knowledge transfer where there are few incentives for cooperating and sharing expertise. For example, the consulting firm largely assessed its employees on whether their hours were "billable" to the client. However,

because the reward system had not changed since implementing Notes, employees perceived time spent on Notes as less legitimate than client work as it was non-chargeable (243-244). In addition to formal reward and incentive systems, an organization's culture characterized by values and belief systems plays a vital role in knowledge management initiatives. The next section outlines how organizational culture interrelates with organizational structure to support or inhibit the effectiveness of knowledge management processes and technologies.

Organizational Culture

Discussions about organizational culture found in knowledge management literature focus on individual and group value systems. As noted by many scholars and practitioners, successful knowledge management initiatives require organizational cultures that value the creation, sharing and use of knowledge (Davenport and Prusak 11-12; Gold 185-214; Grover and Davenport 5-21). "The management challenge is to create an environment that truly values sharing knowledge," says Richard McDermott (103-17). An explicitly stated system of corporate values determines the types of knowledge that are desired and the types of knowledge related activities that are tolerated and encouraged. Trust and openness are commonly cited as two of these explicitly stated values that promote knowledge management behaviors (Gold, Malhotra and Segars 185-214).

Nonaka and Takeuchi's research emphasizes corporate or "knowledge" visions. A knowledge vision is "the 'field' or 'domain' [single parentheses included in original] that gives corporate members a mental map of the world they live in and provides a general direction regarding what kind of knowledge they ought to seek and create" (227). Top management creates a knowledge vision to foster a high degree of commitment from middle managers and frontline workers and provide meaning to the daily tasks they are performing on the job (228).

A knowledge vision must be open-ended in order to foster the desired personal commitment. Nonaka and Takeuchi insist that "a more equivocal vision gives members of the self-organizing team the freedom and autonomy to set their own goals, making them more committed to figuring out what the ideals of the top really *mean* [italics not in the original]" (157).

Employees may still hoard knowledge despite the best efforts of senior management to inculcate a knowledge sharing culture. Geoff Walsham references Foucault's concept of the inseparability of knowledge and power to imply that individuals may not wish to participate in knowledge sharing for reasons related to organizational politics.[11]

Orlikowski's study of a Lotus Notes implementation at a consulting firm illustrates Walsham's point. She found that senior managers felt little incentive to share their ideas for fear that they may lose status, power and distinctive competence in an individualistic, hierarchical culture. One consultant's comment clearly illustrates how the residual power system inhibited knowledge sharing:

> Power in this firm is your client base and technical ability….It is definitely a function of consulting firms. Now if you put all this information in a Notes database, you lose power. There will be nothing that's privy to you, so you will lose power. It's important that I am selling something that no one else has. (qtd. in Orlikowski 246)

Failures in implementing knowledge management systems are often blamed on the organization's culture; or, more specifically, it is argued that people were unwilling to share their ideas or take the time to document their insights. Organizational culture is hard to change and rarely yields to efforts to change it by manipulation of rewards, policies, or organizational structure (McDermott 103-117).

Instead of trying to change existing organizational cultures, McDermott suggests that organizations encourage the formation of communities of practice where knowledge sharing is naturally valued:

Summary of Organizational Structure and Culture

An organization's structure and culture can both enhance and detract from effective knowledge management. Self-organizing communities of practice, empowered middle managers or mediators, appropriate reward systems, clearly communicated knowledge visions and collective value systems greatly support knowledge sharing. Conversely, ill-defined roles, misaligned incentive systems, unclear corporate visions and disruptive organizational politics inhibit knowledge sharing. In short, individuals must directly experience personal benefit from sharing or making their knowledge explicit.

Organizational structure and culture are vital components for actualizing knowledge management processes and technologies. The next chapter explores the complex relationships between organizational structure and culture, knowledge management processes and systems and establishes the research questions for this paper.*

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11 See Foucalt, M. Power/Knowledge: Selected Interviews and Other Writings (1972-1977) qtd. In Walsham: 603..Learning communities thrive in a culture that supports sharing knowledge.

However, they are also vehicles for creating a culture of sharing. While it is important to align measurement, policies and rewards to support sharing knowledge, the key driver of a change toward sharing knowledge is likely to be within communities.12

***For Knowledge Reuse See The Review section of this Thesis**

12 See Kuhn, Thomas. The Structure of Scientific Revolutions (Chicago, IL: University of Chicago Press, 1962); Etienne Wenger, Communities of Practice (Cambridge: Cambridge University Press, 1998) in McDermott: 103-117.

Appendix D

Some Articles From SHRM Magazine

Thought Leaders Identify HR Trends

The third annual SHRM Foundation Thought Leaders retreat, held in August in Washington, D.C., identified a number of important trends impacting HR and served as a springboard for the Foundation's strategic planning process. As a result, the SHRM Foundation added the following topics to its list of 2002 program priorities: *the changing role of the HR professional and closing the gap between research and HR practice.*

"As the catalyst for leading-edge HR research, it's essential that the Foundation be on the cutting edge of the issues shaping the future of human resource management," said Foundation president Bruce Avolio. "By bringing together thought leaders from both the practice and scientific communities, we are better able to sense emerging issues, evaluate current research priorities, and generate new initiatives for our agenda for the next year and beyond."

Several main themes emerged from the retreat's presentations and small group discussions. First, the HR profession has never been better positioned for strategic leadership within organizations due to the growing awareness of the value of human capital (knowledge) as a competitive advantage. In addition, the speed of change and globalization are pressuring organizations, CEOs and HR leaders to respond faster to market forces. All employees, including HR, will need to have an entrepreneurial mindset.

Information technology is also changing the way HR works, and its influence will only increase in the next 10 years as more employees have access to their HR information on the web. HR measurement, particularly the need to quantify human capital or other intangible assets, is likely to be a major issue within the next decade.

Finally, HR will need to be more knowledgeable of research findings underlying sound HR practices, possess greater business literacy and become more strategic in its outlook. Armed with this information, the Foundation Board has outlined the following priorities for the coming year: technology, globalization and HR measurement. Further, it will expand its outreach to leading researchers.

Current research and goals

"The Foundation is already at the forefront of leading-edge research studies in technology and human resources," said Herb Heneman, Foundation vice president for research. For example, the Foundation supports Kay Bartol's groundbreaking work in virtual HR, he added. Bartol is a researcher with the Robert H. Smith School of Business at the University of Maryland.

Also due for completion is the major presidential research initiative and breakthrough study on HR's role in enterprise resource planning (ERP) systems. "ERPs are the internal equivalent of mergers and acquisitions (M&As), and their 75 percent failure rate is about the same [as that of M&As]," Avolio said. "These internal technology systems affect how people work and relate to each other in large-scale organizations. And we need to know if HR's early strategic involvement makes a difference to success, just like we were able to show in the M&A study of 447 senior HR executives worldwide."

Bridging the gap between research and practice has also taken on a greater urgency based on the results of a recent Foundation study by Sara Rynes. A researcher with the Tippie College of Business at the University of Iowa, Rynes found a general lack of awareness and knowledge among HR practitioners about 38 current research findings.

"There's a lot of valuable HR research being done, but the information needs to be disseminated in a way that makes sense to practitioners," explained Foundation Board member Hank Hennessey, SPHR.

The changing role of the HR professional was identified as an overarching theme of the Foundation's efforts in the coming year. For example, the Foundation is exploring a major initiative into the changing role of HR in small companies.

"One-third of all SHRM members work in HR in organizations of 500 or less employees," said Foundation past president Lynda Brown, SPHR. "Little research has been done on the evolving role of HR in small organizations, especially with the emergence of dot-coms and the impact of technology."

This year's retreat also marked the beginning of a new Foundation tradition. For the first time, members of the SHRM, HRCI and SHRM Global boards; other HR leaders; and Foundation-funded researchers were invited as participants. Avolio saw this diverse gathering of HR leaders as a "unique opportunity to discuss new trends and ideas to move the boundaries of the field forward."

The Foundation Board will finalize its 2002 Strategic Plan at the SHRM Leadership Conference, November 15-17 in Virginia. At that time, Avolio explained, "the Foundation's strategic plan must be aligned with SHRM's plan in order to create synergy and maximum impact for advancing the profession."

New Study Identifies Key Competencies Necessary For HR
http://www.shrm.org/press/

High Performing HR Function Affects Bottom Line Nearly 10%

(Alexandria, Va., June 22, 2003)— A recently completed toolkit from the Society for Human Resource Management (SHRM), University of Michigan Business School, and the Global Consulting Alliance identifies five key competencies human resource (HR) professionals must have in order to impact business financial performance.

The Human Resource Competency Toolkit includes an online HR Competency Self-Assessment instrument and the guidebook *Competencies for the New HR.* The Toolkit was developed by Professors Wayne Brockbank and Dave Ulrich from the University of Michigan Business School with help from their Project Manager, Dave Yakonich. The Toolkit is designed to provide a framework for developing the skills, knowledge, and behaviors that will allow HR professionals to add greater value to their organizations. The Toolkit is based on the Human Resource Competency Study research project that was been sponsored by the Executive Education Center at the University of Michigan Business School. The study is the fourth in a series over the last 15 years to assess the competencies that are necessary for HR professionals to maximize their contributions to business performance.

Five major categories or domains of HR competencies emerged when the differences between HR professionals in both high-performing and low-performing organizations were analyzed. The domains are as follows: Strategic Contribution, Personal Credibility, HR Delivery, Business Knowledge, and HR Technology.

The study found that, taking into account these five core competencies, HR practices, contributions and activities impact business performance by approximately 10 percent. Business performance was defined in the study as "financial performance of the business over the last three years compared to major competitors."

Changes to business practice have forced HR professionals to adjust their role and the contributions they make, as well as to obtain new skills and competencies to meet these demands," said SHRM Vice President of Knowledge Development, Debra Cohen, Ph.D., SPHR. "With this study and others, it is extremely difficult to argue against the strategic and financial contributions HR makes to an organization."

Wayne Brockbank, Clinical Professor of Business at the University of Michigan Business School suggests: "In many companies, HR professionals have been more interested in developing other departments than they have been in developing themselves. This may have been partly because they were not entirely sure where to focus their developmental efforts. This

Toolkit and the research on which it is based give a clear and compelling developmental agenda to enhance the competencies and contributions of HR professionals."

The study finds that strategic accounts for nearly half of HR's total influence on business performance. The four sub-categories or factors of strategic contribution are culture management, fast change, involvement in business decision making and leveraging customer information to create unified and customer focused organizations. HR professionals must be credible to both their colleagues and the employees they serve. The research finds it critical that HR have effective relationships with key people inside and outside the organization. They must deliver results and establish a reliable track record. In addition, HR professionals must have effective written and verbal communication skills.This competency encompasses the HR activities that are traditionally associated with the HR function. There are six major factors within this domain—staffing, development, organizational structure, HR measurement, legal compliance and performance management. The fourth competency domain is business knowledge. To become key players in the organization, HR professionals must understand their organizations and the industries in which they work. However, knowing this information is not enough. The study indicates that HR professionals in high-performing firms know as much about business as HR professionals in low-performing firms. The difference between the two is that high-performing HR professionals use this knowledge to make strategic contributions. Technology is increasingly used as a delivery vehicle for HR services. The study finds that HR professionals need to be able to use HR technology and web-based channels to deliver services to employees. However, it also shows that the promise of HR technology to noticeably impact the overall financial performance of the firm has yet to materialize. Many companies who have moved aggressively into this arena are still "working out the bugs." The HR Competencies Study included over 7,100 respondents from 241 diverse companies that were distributed globally across a variety of industries of all sizes. Data were gathered from three sources: HR professionals evaluating themselves; HR colleagues or associates evaluated the HR professional participating in the study; and third, non-HR associates, who were generally line executives, evaluated the participating HR professionals. The HR Competency Toolkit is based on data from the non-HR associates.

The Society for Human Resource Management (SHRM) is the world's largest association devoted to human resource management. Representing more than 170,000 individual members, the Society's mission is both to serve human resource management professionals and to advance the profession. Founded in 1948, SHRM currently has more than 500 affiliated chapters within the United States and members in more than 120 countries. Visit SHRM Online at www.shrm.org.

Over the last twelve years, Business Week *has ranked the HR programs at the University of Michigan Business School's Executive Education Center as the best in the North America and Europe. The University of Michigan Business School HR faculty has conducted the HR Competency Study over*

the past 15 years. The study serves as the basis for the design and delivery of the three major HR Executive programs at the Michigan. For more information, see http://execed.bus.umich.edu

http://www.shrm.org/press_published/toc.asp

Publications > HR Magazine > Articles*Sep 2003 vol: 9 First in a two-part series.*

The human resources function has changed. Over the last decade, the role of the HR professional has migrated from an isolated back office and occasionally bureaucratic function to one that is viewed as a competitive advantage that helps organizations achieve strategic business objectives.

Technology has been a critical enabler of this transformation; however, most organizations do not realize the full potential of the benefits this technology offers. An immense amount of data is available within any organization, but often it is not being leveraged to identify potential areas in which companies could gain competitive advantage. There is gold in that data that has yet to be discovered. Effective analysis of HR data can give an organization that competitive edge. Until the 1990s, executives typically viewed the HR function as a necessary administrative expense or as part of the cost of doing business. As technology evolved, it became a vehicle through which organizations could gain efficiencies, especially in those areas in which the volume of information and transactions were high. That made the HR function a perfect candidate for automation. As the economy began to expand in the mid- to late 1990s, workforce demographic shifts became obvious, and the war for talent became a hot topic in many board rooms. CEOs began to realize the value of a strategic HR organization.

But while some organizations have embraced the concept of a strategic HR function, others have not. The latter are losing competitive ground and eventually will be forced to re-evaluate their HR delivery models. The days of HR filling only the role of a transactional taskmaster—submitting medical forms, updating contact information, realigning 401(k) investment allocations and filling staff openings—will soon disappear. Technology has played a key role in enabling HR functions to become more strategic. The basic HR administrative and transactional responsibilities must still be done effectively. This demand has not changed for any organization; however, technological advances make such transactions less paper-intensive and provide the capability to shift transactional responsibilities and routine inquiries to employees and managers through self-service features. With routine transactional duties distributed throughout the organization to managers and employees, HR professionals are freed to contribute more strategically within the organization. While the advantages of technology in the area of self-service capabilities are currently being explored by most organizations, many other organizations have not yet realized the competitive advantages of using the vast amount of data available to them within their current HR system. Mining the gold in HR data and thereby gaining competitive advantage is the next step in HR's continuing evolution.

Combining HR data with other business or environmental information allows organizational leaders to act more quickly and make better decisions, enabling them to achieve business objectives.

By marrying quality people information with key business data, decision-makers can gain a better understanding of business processes and drivers.There are four key nuggets in which competitive advantage—or gold—can be unearthed through HR data mining. This month, we'll examine two of them: turnover analysis and employee development.

Understanding turnover and its drivers can provide an organization with key information to manage staffing needs and proactively manage associated costs. Significant competitive advantage can be gained in the marketplace if an organization proactively manages and controls turnover. The widespread focus on talent shortages in the late 1990s helped to put HR practices in the spotlight and to gain HR leaders a seat at the executive table. The low unemployment rate, in conjunction with the shifting demographics of the workforce—mass exodus of baby boomers, increase in minority representation—and the huge demand for technical skills forced C-level executives to educate themselves on the importance of culture as a key differentiator in the marketplace. Suddenly, an organization's culture and the HR practices supporting it became a focal point for investments and discussions in the executive suite. While the availability of funds was a breath of fresh air for HR executives, the pressure to perform was never more intense. As the economic downturn began in 2001 and unemployment rates began to rise, the emphasis shifted away from investment in HR to more-efficient HR functions. While the overall unemployment rates have risen, evidence shows that the war for talent is still raging for certain skill sets, such as nursing and systems engineering. For example, our studies show that more than 85 percent of hospitals have nursing shortages. Why is there a shortage? The answers are disturbing for HR professionals in health care who are challenged each day to solve the problem. Significant contributing factors to the shortage of nurses include:

- In 1984, 51.8 percent of registered nurses (RNs) were under the age of 40. In 2000, that number dropped to 31.7 percent.
- With a current average RN age of 45 and a high burnout rate, the RN ranks will thin considerably over the next five to 10 years.
- Since 1995, enrollment in U.S. nursing schools has declined steadily. Since 1993, enrollment has decreased 22 percent.

As HR professionals in health care begin to understand the talent supply market drivers for nurses, they are better able to position retention-focused initiatives within their organizations. Simply placing an advertisement for an RN is no longer an answer in this scarce talent environment. The focus must shift to retaining the talent already existing within the organization in addition to creative recruiting strategies. While turnover is a continuous cycle in any business, it is costly and disruptive and can have a significant impact on an organization's ability to compete, especially when specific skill sets are involved. For example, a health care organization with 1,000

RNs on staff with a turnover rate of 26 percent will spend $23 million annually due to RN turnover. Even a 1 percent decrease in RN turnover will result in an approximate annual savings of $1 million. Not only will the organization gain a competitive cost advantage, but also by understanding and reducing turnover it will be able to maintain superior patient service by offering the skills necessary to deliver quality health care. To begin a turnover analysis, HR professionals should ask these questions: Are particular areas of the organization turning over more employees than others? Are particular geographic regions more susceptible to seasonal turnover than others? Can trends be identified that will help to streamline sourcing, hiring and retention practices?

A key component to turnover analysis is the ability to identify trends and to understand the reasons behind them. Perhaps external market factors are at work, prompting employees to leave one company for another. Or, perhaps internal challenges are leading to increased turnover within a particular business unit. By combining turnover trend data with data gathered from existing HR practices—such as exit interviews—turnover analysis can either validate or invalidate an organization's assumptions regarding turnover drivers. Analyzing key turnover statistics—including total company turnover, turnover by position, turnover by particular geographic region and turnover within a particular function—can help to identify critical drivers. In addition, other key details, such as workforce demographics—age, race, gender and average length of service—can be analyzed to assess any potential diversity issue within the organization. Turnover trend data can also be compared to national and local employment statistics to accurately gauge whether the turnover is comparable with the current employment market. Continually analyzing turnover trends enables an organization to understand and respond to issues prior to their becoming a disruption to achieve business objectives. Here comes the usefulness of the information technology in the HR function ease of use and dependability etc. Makes it much more efficient and effective to be used as a tool.

A key differentiator for many organizations is how well they provide development opportunities for employees. Employee development provides competitive advantage both by enhancing the skills and knowledge of the workforce and by increasing retention rates of key employee groups. Employee development occurs in a number of methods, out of which most notable are formal training programs and development assignments. Specific data analysis in the area of formal training programs might include: Costs. The benefit must outweigh the cost. By compiling training-related expenses, an organization can determine the total cost for each training program by region, location or employee demographic. This data can be compared to impact data to demonstrate return on investment (ROI especially of Human Capital) for individual training programs. Usage. By tracking employee completion and enrollment rates, an organization can determine a measure of program usage. The best training program in the world is useless unless measures are in place to ensure its effective implementation. Training impact. Are employees applying what they learned during training? Are specific work-related behaviors changing in accordance

with learning objectives? By identifying data elements that can measure pre- and post-training performance, an HR ROI analysis can be completed to assess the success of a company's training program. For example, an organization could measure sales revenue before and after implementing a sales training program. Another area relating to training impact is its effect on employee retention and advancement. Are employees progressing as expected? Have retention rates improved? Has individual performance improved?

In addition to formal training programs, developmental assignments can be tracked in an HR information system. Over time, an organization can construct successful career paths and gain insights into key development needs by analyzing the data available. Skill gap analysis for individual employees can identify gaps to close to meet desired job requirements. Managing investments in all areas related to employee data will not only provide organizational leaders with the confidence that they are getting a return on these investments, but it will also position the future leaders of the organization for success. To conduct an employee development analysis, answer the following questions:

Which employees have attended a required training event? Which employees are enrolled for a specific training class? What is the retention time of employees who have completed a specific development activity? What is the correlation between performance ratings and participation in specific development activities? What is the correlation between business unit performance and the implementation of a development program? Your HR management information system is running smoothly, and employees and managers have embraced your self-service applications. Are you effectively using the wealth of information that is contained within these systems? Are you leveraging technology to gather and analyze key data that can help you reach your HR management goals? Take the time to determine how you can collect and implement employee data to demonstrate the HR function's value and potential.

Editor's note: Next month's column will look at technology's potential role in workforce planning and cost analysis.Beth Patterson is a senior manager and Steve Lindsey is a senior consultant with the Human Capital Advisory Services practice of Deloitte & Touche in Dallas. HR Magazine: Part One: Mining the Gold October 2003

Part Two : October 2003 Vol. 48, No. 10

Second in a two-part series. HR Information Systems

During the last decade, most organizations have implemented some form of HR information system (HRIS) to leverage significant advances in technology. By using this technology to assist HR with its transactional functions, many HR departments have been able to position themselves to become fully recognized business partners within the organization. However, once they reach the executive table, few HR leaders have been able to provide the hard analytical data to support strategic business decisions, even though the data exists. HR executives are becoming much more analytical in their approach, and they are much more focused on business with recommendations and guidance. There is no question that leveraging HR data provides competitive advantage in the critical areas of turnover analysis, cost analysis, workforce planning and employee development. The question that remains is: Can HR provide the analysis in a timely and well-understood format? To survive in a competitive market, the answer should be a resounding yes. By marrying quality people information with key business data, decision-makers can gain a better understanding of business processes and drivers. This month's column will look at the benefits of effective workforce planning and cost analysis.

HR can achieve competitive advantage by having the necessary business-related talent available to execute business strategy. Workforce planning is the constant review and management of an organization's workforce needs. Effective workforce planning is accomplished when the process of maintaining current workforce data, forecasting future workforce needs and identifying current talent gaps is streamlined. A fundamental function for most HR systems is to build positions and job descriptions (KSA's of HR), including the key competencies, educational and physical requirements, and experience necessary to successfully perform a particular job. Armed with this information, along with an understanding of the market forecasts and business strategy, an HR leader can more efficiently source, recruit and staff for future business needs. You can make technology work for HR to develop effective workforce management. Here are some questions to which HR can find answers through a workforce planning analysis.

Which employees speak a particular language fluently? How many employees are in a particular job classification? Which employees have a particular skill set? How many employees were rated with our highest performance rating and who are they? How successful are our various recruiting sources? Which employees have completed a specific development activity?

Anticipating workforce needs is a critical component of filling positions quickly and, thereby, remaining productive and competitive. Leveraging existing HR data to anticipate and plan for future needs is absolutely critical. Once the needs are identified, the ability to quickly source individuals to fill positions can often be vital for an organization's success. Filling open

positions internally is often the most convenient path to meeting immediate staffing requirements. Easy access to information showing the credentials and capabilities of internal employees—for example, their current roles, work experience within and outside of the organization, languages spoken and openness to relocation— allows HR to quickly identify internal candidates for particular staffing needs. Succession planning is another important program that can provide competitive advantage. It is important that an organization never be vulnerable because of the unexpected departure of a key employee. By early identification of individuals primed for advancement, an organization can effectively recover when a key individual leaves. Leveraging data within the HR system can also provide valuable gap analysis information to guide development plans and assignments for succession candidates. Be proactive is the way to do it with HRIS. Insist that your enterprise resource planning (ERP) systems can be queried to provide replacement candidates when necessary, as well as a fit/gap analysis for skills or competencies.

Another key area of workforce planning is the analysis of HR data to understand past successes. For example, it is important to understand the success of recruiting sources to determine where to invest future recruiting funds. Consider the case of a large global technology company that hired more than 29,000 employees within one year. Unfortunately, the company's executives had no idea how many of those new hires matched its critical skill sets. Recognizing talent acquisition as a critical business success factor, the company began to analyze its workforce planning, sourcing, recruiting and induction process data. After clearly articulating the critical skill sets, including network, systems and various other engineering disciplines, the company gathered data to understand its acceptance, cost-per-hire and retention rates. Executives identified several sources for the critical talent and began tracking the effectiveness of each source. Once HR understood this information, it could direct talent acquisition investments strategically. Accurate, proactive workforce planning provides competitive advantage. Just as a miner performs research prior to panning for gold, so must the HR manager leverage available information to plan successfully for labor needs.

Aside from the obvious cost implications that employee turnover presents, consider additional costs such as labor, benefits and incentives. Labor cost is usually one of the largest expenses for most organizations, if not the largest expense. Instant access to labor-cost information is critical to determine not only allocation of vital resources, but also whether the organization is successful in its hiring, retention and development practices. As with turnover, by comparing trends and ramp-up costs for new hires, HR can calculate cost per employee to include both opportunity and new-hire training costs. HR can find answers to the following questions through cost analysis:

How many employees are participating in each benefit plan type? What type of workers' compensation claims are we experiencing and how much are they costing the organization? How many accidents are reported for each business unit? Is our incentive distribution correlated to business unit

performance? Company-provided benefits are another enormous cost to manage. For most companies, benefits cost 35 percent to 40 percent of payroll. With the wide array of benefit plans offered to employees, it is important to understand utilization and participation to ensure that benefit funds are being used to their full advantage.

Participation rates are key. As the costs of employer-provided programs and insurance premiums continually rise, awareness of the organization's spending on these programs is critical to maintain adequate cost controls. Understanding employee participation rates can provide justification for future resource allocation to a particular program or for negotiating leverage for more favorable contracts with providers. In addition, by analyzing injury and workers' compensation claims, HR can maintain historical data to manage any potential safety or worker health related issues.

Case Study Poorly Planed Incentive System!

One example of leveraging cost information comes from a small manufacturing company with 800 employees located in five plants throughout the United States. This company discovered the advantages of using its data to understand the effectiveness of its incentive program. The manufacturer experienced significant business cycles and had adopted the philosophy that a moderate incentive pool would be planned each year regardless of the market influences. Although the natural market shifts might have a slight impact on the overall pool, the company decided to distribute incentives in both the good and the bad years.

This company did no analysis of its incentive distribution. Top executives received pools of funds to distribute at their discretion. As part of an overall engagement to redefine the compensation structure, consultants performed an analysis of incentive distribution. Based on this analysis, the consultants concluded that incentives were inconsistently distributed, ranging from 0.5 percent to 26 percent of base salary.

Evaluation of System: Analyzing the information for plant managers only and then comparing the incentives distribution with plant performance data was extremely enlightening for the company executives. No correlation existed between plant performance and incentive distribution. Obviously, this organization was not achieving the desired impact from its incentive investment. With this cost analysis, the company restructured its incentive plan to drive performance throughout the organization.

This is a prime example of how the right technology in the right hands can have the maximum impact on workforce performance. Fiscal controls and assurance that funds are providing maximum benefit for the organization and its employees can save significant capital that can then be redirected within the organization. Controlling costs and maximizing the use of each dollar invested is a key element in achieving competitive advantage. *Beth Patterson is a senior manager and Steve Lindsey is a senior consultant with*

the Human Capital Advisory Services practice of Deloitte & Touche in Dallas.

HR Technology "Closing The Security Gap" data protection initiatives should include employee training By Kathleen Coe

Protecting Sensitive Data Requires Diligence (*HR Magazine,* April 2002)

Some human resource executives believe that the responsibility for information security rests solely on the shoulders of the information technology department. However, they could not be more wrong.

Employees can play a big part in keeping sensitive information inside the organization and out of the wrong hands. But without the proper education and training, a well-meaning worker can negate the success of your security products. This can put your business at risk and damage the company's relationships with its partners and customers.

HR professionals should work with the information technology (IT) department to identify weaknesses in security policy, help design an effective training program and implement employee programs that safeguard sensitive data.

An Internet firewall is an essential component of enterprise IT security. A set of programs on a company's network server protects files, proprietary applications, e-mail communications, etc., from the outside world. Hardware and software firewalls are designed to filter and block unwanted packets of data from entering or leaving the network, thereby protecting corporate data from hackers and other malicious Internet threats.

However, Internet firewalls are often circumvented not by experienced hackers, but by careless employees. Individuals who have not been properly taught how to thwart Internet threats can be responsible for serious security breaches. It is therefore essential that organizations build a human firewall.

The HR department should work with the IT department to design and implement a comprehensive training program that will engage employees and empower them to boost data security and, subsequently, company success.

The need for a human firewall is clear. Most large corporations and government agencies in the US and other countries have detected computer security breaches during the past year that resulted in huge financial losses. In an effort to better protect themselves from such losses, many companies have implemented robust, integrated security systems. However, many organizations still fail to manage the security threat posed by their own employees.

To create an effective human firewall, consider these three key components:

- End-user awareness.
- Specialized training.
- Management awareness.

The first step in creating a strong human firewall is to perform a comprehensive audit of existing practices and awareness. While this survey may vary for each level of employees, the most important information to gather revolves around these questions:

- What is the existing security policy?
- Can the existing security infrastructure (including employees) detect security breaches?
- Would the organization know what to do if a security violation was detected?

End-User Awareness Evaluate end-user environment to determine whether any special circumstances, such as a remote workforce or use of wireless devices, will require extra security. Find out how new employees are trained and if they understand how to operate their computer equipment. Determine if there are any existing security policies and, if so, whether employees understand them. In short, get a handle on exactly which end-user systems are in place, who is operating them and how well trained the operators are.

Develop a comprehensive awareness program that will focus on any needs uncovered. This program should include development of appropriate policies regarding computer use that can be easily understood and enforced at all levels of the organization. Work with management to determine an appropriate venue from which to convey the policies and administer training to the employees. Make provisions for recurring training of both new and established workers.

This training should not only outline the company's security policies, but, also, it should educate employees about simple things they can do to protect company data, such as handling e-mail attachments and creating and storing passwords. Workers who telecommute or travel frequently should understand how to secure their laptop or PDA. Consider covering topics such as phone fraud, web browsing, e-mail spam, instant messaging and anti-virus updates. Each of these activities can expose a company to unnecessary risk if employees are not properly trained. HR should work with the IT department to uncover key challenges in each area, as well as to develop easy-to-understand security procedures for employees.

Remember that successful awareness programs are much like marketing campaigns: little bits of information distributed often. To accomplish this, use multiple methods of communication. In addition to regular formal training sessions, distribute posters, flyers and e-mail reminders to keep the training fresh. This not only helps the employees remember what they've heard, but it also demonstrates that the company's security policies are long-term commitments. Everyone in the organization should receive the training, not just new employees or other select groups.

Specialized Training In addition to generic end-user training, develop specialized security training for specific groups in the organization. These groups may include the physical and information security staff, remote workers, or other employees with specific IT responsibilities. The IT department can assist HR in identifying these groups. Again, you can start out with a survey to determine the level of awareness and any existing policies—both formal and informal. Once specialized groups have been identified and surveyed, implement a training program that meets each group's needs. Again, measure the success of the program and follow up with additional training and reminders. Make sure that the IT department updates HR on a regular basis about new technology and security initiatives. As new technology is added, introduce it to employees with security best practices and make sure each member of the group understands how to use it. Ensure that the IT team is keeping current on best practices and product patches or updates and that this information is trickling down, as necessary, to HR and all employees.

Management Awareness Few security programs are successful without complete management support. Not only are managers end-users (with access to sensitive information), but they are also leaders who can be invaluable to the success of any security initiative. Hard facts that link information security with the company's bottom line will help management understand the importance of security policies and effective training programs, so be prepared to present a business case to management for improving the organization's security. This will help managers become devoted advocates who insist on maintaining and enforcing security policies.

Managers should be given extra training as well as extra responsibility for security. This helps them become advocates of security programs instead of merely end-users. They serve as examples for the rest of the company; if they do not take security practices seriously, no one will. Managers should be required to maintain policies and to provide recurring training within their respective departments. This not only spreads out the workload, but it also creates a pool of devoted managers to ensure the long-term viability of an information security program.

An information security program that properly accounts for the strengths and weaknesses of employees is essential to securing a company's data. Information security is best achieved when cutting-edge technology is combined with a highly trained and motivated workforce that understands the basic practices that will keep an organization's data secure. Empowering employees to serve as a human firewall may be the best way to protect internal resources that have a major impact on the success of the company, its partners and its customers. *Kathleen Coe is director, Americas Education Services, for Symantec Corp. of Cupertino, Calif.*

August 2002 Vol. 47, No. 8 Count on Business Value "HR must advance to the second level of ROI-business impact *by Bill Roberts*
SHRM Home > Publications > HR Magazine > Articles > August 2002

Bill Roberts is a freelance writer based in Los Altos, Calif., who covers business, technology and management issues.

Human Resource Management System As the business case for implementing a human resource management system (HRMS), researchers calculated the usual costs of the technology and the savings it would produce. But reducing HR transaction costs through automation—though important—was not the most important reason to purchase the system.

"The business case wasn't just about doing HR better but about delivering business value,"*(Margaret Byl vice president of HR at Suncor Energy Inc. based in Calgary, Alberta, Canada).*

Suncor—a mining, natural gas and refining company with about 3,200 employees—is one of a small but growing number of companies savvy enough to understand that the traditional factors considered in calculating return on investment (ROI)—cutting administrative costs and reducing HR staff-to-employee ratio, for instance—are limited. Improving the entire company's productivity is the priority.

So, Byl set out to measure the "business impact" of buying an HRMS. The conclusion matches a growing consensus among consultants and practitioners that the modern HRMS has already squeezed all the inefficiencies possible from transactions and reduced HR staff as much as it can. Now, as HR moves processes to the web, the measures of success will be increased productivity and added business value, experts emphasize.

As is the case with all research not everyone agrees, however, including many CFOs, who are skeptical of the HR profession's business acumen, which is necessary to determine this type of ROI. The trend, however, is to think about ROI more broadly. "It is legitimate to consider the administrative costs savings, but it should be a small piece of the business case for any investment," *(Naomi Bloom), *an HRM delivery systems strategy consultant. Bloom, managing partner of Bloom & Wallace in Fort Myers, Fla., advised Suncor.* Beyond Traditional ROI Historically, if they considered ROI at all, HR professionals focused largely on the people, paper and postage costs to be saved. In other words, how much does it cost to do something today without technology, and how much will it cost to do it with technology, including the cost of the new system?

Therefore if companies don't look for benefits beyond HR, they set themselves up for problems when they justify new systems in the future (especially when the systems will be more sophisticated and innovative with functions as virtual HR etc). "If you only look at things from an administrative point of view, once you do them right, the only thing you can do better is do them cheaper. But once you get to a certain point you can't do them cheaper even. What are you going to do the next time management tells you to cut costs?" argues independent consultant (Jay Stright), *formerly of AG Consulting.* Thus there is a catch to this dilemma that is from the start, HR should focus on the second level of ROI—business impact. "If you look at this second ROI, you will allocate dollars differently" (Stright). HR professionals, who are perhaps more administrative by nature, must become

more strategic to see beyond traditional cost-reduction ROI.. It seems HR professionals know they need to measure beyond traditional ROI. In its "2001 Human Resources Self Service/Portal Survey," Cedar Enterprise Solutions Inc., a Baltimore-based HR consulting firm, found that ROI as measured by reduced administrative costs is just one objective sought by HR—and not even the most important one—that respondents hope to accomplish with self-service applications for employees and managers. Others include improving services to employees and managers and enabling HR to become a strategic business partner. * *(See "HR Has High Hopes for Self-Service Tools." Strategic HR magazine 08-2002)* HR professionals increasingly are afforded the opportunity to make their case. As the Cedar survey found that most North American companies—67 percent—require HR to make a business case when pitching technology projects, up from 62 percent in 2000 (the first year Cedar asked this question). In addition, 38 percent of North American respondents collect metrics to gauge success after the implementation, up from 8 percent in 1999. The survey, the company's fourth annual, included 240 respondents—an 11 percent response rate—from large companies in North America.

Broadly defined ROI is a hot topic these days because companies still want to invest in technology. But they must have a good business case for it, as the Management is demanding better business decisions be made for technology due to a number of factors such as economic conditions, wide spread mergers and acquisitions, higher turn over rate, out sourcing and globalization etc. ROI is just one piece of that puzzle." *(Alexia Martin) *Cedar's director of research and analytics*. When it comes to ascertaining the business impact of ROI on technology, HR must rely on the departments using the system to report back. "The ROI in HR applications is not in the HR department, It is in all the other departments of the organization. HR ignores that at its peril." **(John Johnston), director of strategic consulting and e-HR at Arinso International, a Brussels, Belgium-based consulting firm operating in the United States, Canada and 17 other countries.* That is one of the key issue of management information system is that it is wide spread across function and departments in the organizations. It is easier for HR to remember that caution if the organization's culture emphasizes business value in all divisions, including HR. For example, as miss Byl HR executive at Suncor—was trained as a chemical engineer. Before her appointment as vice president of HR in January 2002, she spent several years in business development, conducting economic and business case analyses. Thus making her task more curb some and more efficient both.

As she herself said "The business driver for putting someone like me in this position came from wanting to have a more traditional project management focus in implementing the HRMS," (Byl) . Company management chose her because they wanted someone who could help lead a project that would deliver broadly defined business value, not just reduce HR costs among other factors. **Byl's experience is complemented by that of her boss, Sue Lee, the senior vice president of HR, who has had a more traditional HR career.* In the research Suncor did a traditional ROI calculation but used conservative estimates about how much it might save with more efficient

transactions across the company. “We did a routine ROI looking at the investment, the costs taken out and the discounted cash flow, But we also tried to understand where some benefits could come in non-HR areas.” (Byl)

There are many ways for HR professionals to take the next step beyond traditional ROI. Offers consider this example : A web-based resume processing application could reduce the cost of processing each resume. The before-and-after metrics could prove the system is cheaper and more efficient than the manual method. Even looking at it casually it sound more efficient and effective reducing a lot of cost tangibly terms as well as intangibly. “But the application doesn’t mean that the organization is getting better resumes, or easing the hiring decision, or improving the DNA mix of my workforce or screening out non productive employees. But be careful as there is a huge risk to it and companies might even make things worse, if they have to reduce the head count and lose people with good judgment who were keeping the loonies out and helping to filter the resumes.” (Consultant Bloom)

Therefore the question arises: How can HR ensure that its programs have positive business impact? The answer to the question could be using a top down approach i.e. in starting at the top of the organization and asking what it is supposed to accomplish. Doing somewhat of a gap analysis (Where one is and where they want to be). And questions like What are the outcomes for which this organization gets rewarded for success?. In for-profit organizations, the measures are usually financial—improving revenues, profits, productivity improvement, efficient customer services to retain them and market share. The business strategy to improve all or some of them it will vary by company. But here the HR should ask: What must workers achieve to meet these outcomes? In the example stated above example, instead of seeing the resume application strictly as a cost-reduction tool, HR could think of it as a way to recruit the people needed to meet specific business goals. Plus focus of the strategy and company goals must be aligned as Innovation focused companies where it is critical need to reduce time-to-market for new products? The resume application should identify people who are risk takers and innovators.

In Sales and growth focused companies the need is to improve profitability through better budget management? New recruits need a cost-containment mindset. Thus once HR people know what the business outcomes are, the function can consider how to use technology to redesign processes to achieve those outcomes, Now the organization and more specifically the HR have a formula for ROI.

Sharing HRMS Data Outside HR As with previous case of resume one could add that business value also can be attained by allowing non-HR employees to use the HRMS data in new ways(Johnston).That is moving HR data across functions in the organization. For example, a Manhattan-based bank continuously expands staff and shifts employees around. The facilities department acquires new office space and handles moves. When leasing new space, the department uses a standard amount of square footage multiplied

by the number of employees, then rents that amount of space. But some people need less space than the formula requires. The facilities managers figure they routinely lease 15 percent more space than they need, wasting millions of dollars. Also, facilities managers do not know which employees have changed departments. Whenever change or expansion is in the works, two staff people spend most of their time walking around to determine who is working where. Every cubicle, however, has a distinct number. And most HRMSs have a data field for work location. Here clearly is the waste of time.

This glitch can be solved easily if HR would input the work location and give facilities staff access to the HRMS, facilities staff could more accurately calculate individual space needs, thus cutting lease expenses. That information also would enable facilities management to complete an office seating plan without walking around. Plans could be published on the intranet for all employees. Here is another problem the But the bank's HR staff balked when suggested with that plan; they did not want to take the time to input the cubicle numbers. Then consultants proposed letting facilities staff do that grunt work and keep the data updated, since it would benefit them. But that led to the second and larger objection: HR did not want facilities—or anyone else—to have access to the HRMS, even though HR could limit access to certain data fields, thus protecting private information.(Johnston) Here comes the reason HR is only the custodian of HRMS information, not the owner. The more people who use the data every day, the more business value there is. But these are things HR people are not typically thinking about. Thus the real role of HR is to be under stood first by HR itself then by others.

Conscider the Suncor example, HR is looking for techniques for using existing data in new ways. One idea is to maximize the business value of automating salary planning. The time managers spend on salary planning is a hidden cost, according to HR . There is a lot of manual work involved, but the company doesn't measure how much time it takes, so it isn't charged against any HR process. Anecdotally, we know it takes a lot of time.The HR although isn't sure how this will play out, since the company recently selected an HRMS, which won't be rolled out until 2004. But part of the HR's task is to decide which areas to measure for business value before and after implementation. Other possible areas include employee performance management and recruiting, she says.

Given that determining business impact ROI for HR systems is a burgeoning practice, HR professionals should be prepared to defend it to their CFOs. Most would rather receive the traditional ROI, which is what they're accustomed to getting from HR. Most of the time the CFOs are for the most part not accepting these arguments," **(Robert Stambaugh), president of Kapa'a Associates in Kekaha, Hawaii, an HR technology consulting firm.* The advises to this problem is the HR executives should play the game and develop a traditional ROI as well when they pitch e-HR applications or new technologies. Thus creating a win win situation

The HR people can make the case that investing in new HR systems will help company make money especially in the long run, but not many will buy it. There's not enough proof yet. Business value can be part of a business case, but most financial types want to see traditional ROI as well this in good in some cases as well due to the fact, that it would make good comparison with more evolved and thorough New ROI. Until the management sees the hard fact that "Companies are trying to remove costs from their operations. The big cost components are labor, duplicate systems and distribution of paper," noted by (Cedar's Martin), which are traditional ROI measures. However, a number of consultants believe that HR can overcome such objections by sitting down with finance experts before developing a business case. "Make the CFO your best friend. If you are going to do ROI and present it to senior management, the one person you know is going to shoot holes in numbers is the CFO," he says. "HR people must sit down with financial types and ask them how to build the business case says (Johnston). Like all other people financial people are only humans and they will and in most cases do get excited when they find HR people who speak their language." Consider the example of Ms Byl (HR executive at Suncor), Due to the involvement entire Suncor executive committee, which included the CEO, CFO and executive vice presidents of the business units, signed off on her project. Thus it helps that most projects at Suncor, whether for an HRMS or for major equipment for a business unit, are presented in a similar way. "They want to know what is the strategic reason, the investment required, the return we'll get and the risk of getting that return, plus when the executives use the same logic for HR that business units use, it is easier for them to support the project. When we speak their language, we gain credibility with this approach." (Byl).

The process helps HR as well as other functions as "It's not cost-effective to pay people to handle simple, repetitive questions, plus Having online services also helps companies to save money on printing and distribution." *(Mukul Krisna), *an analyst for consulting firm Frost and Sullivan in San Antonio*.

Such an approach is fine for workers who have a PC on their desks, but what about those on the factory shop floor, in retail establishments or out in the field? To bring 24-hour ESS to these employees, the solutions could be many ranging for training employees to use internet, providing extended HR services and some companies are setting up interactive kiosks.

Publications > HR Magazine > Articles > October 2002
KIOSKS BRING HR SERVICEE TO ALL EMPLOYEES
Workers without easy PC access can tap in ESS and corporate intranets
By Drew Robb
October 2002 Vol. 47, No. 10

The recent trend in HR has been employee self-service (ESS), which vendors and consultants tout as a way to relieve the department of its administrative burdens so HR professionals can take on a more substantive role in the organization mainly transformational and strategic roles. **Virtual**

HR Kiosks can increase efficiency dually as noted above, by giving employees who usually don't work on a computer self-service access to HR data. Just as important, is that a kiosk brings services out to wherever people are working. For Example in the united states some twenty years ago, banks learned that they couldn't expect customers to come in during "bankers' hours." They placed ATMs everywhere to add convenience, cut costs and save time. Similarly, positioning HR kiosks on the shop floor and in lunchrooms lets people who might never visit HR, due perhaps to shift work or location, feel part of the team. This becomes especially important tool if the organization is really big, geographically wide spread , following a innovative strategy, or is very diversified.

As noted by a Time Warner manger "At the company employees keep telling us how much they love the kiosks, Although we are geographically spread out and split into different departments, it gives employees the feeling that they are working in more of a close-knit, smaller company environment." **(Mary Tipton), employee relations manager for Time Warner Cable Inc. in Houston.* Tipton deals with 1,650 employees in 27 locations in the Houston area, some a hundred miles from HR. The company purchased six kiosks to bring an HR presence to installers and service center personnel. Each kiosk contains a notebook computer, mouse, keyboard and printer. Initially, the idea was to make only HR forms and information available, but other departments wanted to piggyback onto the system as soon as the kiosks appeared. "Thirty days later, everybody had a page on the intranet," Tipton says. "Employees can see what public affairs or customer service is up to, how far along the technical operations department is on a digital upgrade or who just had a baby."

The kiosks' primary purpose, however, is to serve HR needs. In addition to corporate information found on the intranet, employees can obtain discounts on travel and publications, and check on stock option grants. Next year, the company plans to expand the system. Another 30 kiosks will arrive, at least one for every office, offering additional services. Time Warner Cable is upgrading its PeopleSoft suite from version 7.5 to version 8.3 in 2003, which will enable employees to choose a health care provider and participate in open enrollment online. While the current system lets staff download and print forms to mail in, the new system will enable direct submission of forms online.

But even without these upgrades, the kiosk pilot is creating a big impact, The HR is delighted as employee have all the information they need right where they need it as one executive says "I don't have numbers, but we are receiving noticeably fewer phone calls. Front-line employees are becoming far more savvy on HR issues." Management expects that to change HR's function especially in the years to come. They say that the reduction in phone calls for information has not really been enough yet for any of us to realize any extra time, but as we move more toward employee self-service, we hope to be in more of an overseer/auditor role with the information being keyed in by our employees.

HRIS Enabled PCs Some companies, instead of buying kiosks to provide extended HR services, are simply installing PCs in common areas, such as lunchrooms. Another innovative use is to bring in PC's at the line level or common places with in plants this approach is used by some companies. As one manger says, "I believe the term 'kiosk' is becoming more generic every day," *(*David Moore), HRIS manager at Alticor, Amway's parent company, based in Ada, Michigan.* "The term has come to refer to everything from the rigid touch screen console-style systems to simple PCs as kiosks, making the term more synonymous with the use, rather than the type of system."

Alticor locates low-end PCs that are approaching the end of their useful life in manufacturing buildings. The PCs boot straight into Internet Explorer, and employees can access the HR knowledge base and an employee handbook, as well as a personal profile that includes job history, vacation and sick day balances, and emergency contact information. They can also read corporate communications, and post questions to management and read the responses.

The biggest decision HR departments typically face is where to place a kiosk or a PC. HR managers mostly identify highly trafficked locales in areas that are conducive to and convenient for usage. The units must be accessible only to employees. One hospital, for example, installed its HR kiosk in its cafeteria, where employees easily spotted it and found it useful. However, the hospital cafeteria also was open to visitors, who settle to the kiosk expecting Internet access or other services. **Kiosks Vs PC** While PCs are less expensive than the $2,000 to $6,000 cost of installing a dedicated HR kiosk, actual kiosks do have several advantages. Kiosks can be as versatile as a PC, since many of them contain a PC connected to the company's network or intranet. But kiosks are designed to withstand the wear and tear of shop floor life, unlike most PCs, which are meant for climate-controlled offices. Plus Kiosks can be freestanding, installed on a tabletop or mounted on a wall. They are usually mounted on casters for ease of mobility. Compact countertop models are useful when space is tight, but multimedia designs, which incorporate screens on two, three or four sides are also installed. Another advantage that kiosks have is in their approachability. One of their primary purposes is to reach employees who don't use a PC at work or who don't know how to use one. To some, kiosks may seem more user-friendly, like ATMs or lottery ticket machines, than computers.

Employee self-service (ESS) Aiding HR Function In tandem with growing kiosk deployment, companies are finding numerous innovative ways to use them. Added advantages of kiosks or PC's is as one manager says "Kiosks engender a team approach or mentality and help the company keep in touch with employees," says **(Karla Guarino), vice president for sales at Information Systems in Broomfield, Colo.* For Example, Bell Helicopter Textron Inc., installed 25 kiosks to enable 7,000 employees to access the company portal, MyBellHelicopter.com. It provides company news, policies and procedures, internal employment opportunities, benefits and wellness information, training applications, hazardous materials information, and government compliance standards. One of the biggest advantages of using

kiosks, for Bell, is reduction in payroll paperwork. Instead of printing and hand delivering direct deposit pay stubs, employees log on to check payroll information and can print their own pay records. Other companies and organizations are finding additional uses for employee kiosks/PC's:.

Recruitment. Retail establishments with customer information kiosks are adding a "Want to work for us?" button offering job information and applications. Government employment agencies have installed similar kiosks. For example, the British Department of Work and Pensions recently installed 9,000 self-service touch-screen kiosks at the department's 1,007 job centers nationwide. **E-mail.** The University of Pittsburgh set up more than 100 kiosks in cafeterias, libraries and lobbies to provide remote e-mail access for faculty, staff and students. **Employee training.** General Nutrition Centers has informational kiosks for customers in its stores, on which employees can also access staff training modules. **Open enrollment.** Colorado Springs Utilities provides gas, electricity and water to more than 400,000 people. The field workers among its 1,700 employees can use shared PCs in common areas such as break rooms. During open enrollment, the company sets up additional computer stations. It has conducted two open enrollments completely online with more than 98 percent participation. **Kiosks solve many HR problems**, can be relatively inexpensive and are simple to set up. For businesses already supplying information online, the self-contained units just need to be rolled into place, plugged into a power outlet and hooked into the network or the Internet.

However the point to ponder while going for Kiosks or terminal PC like system in employee self service programs is that, HR has to make sure it is easy to use so that one don't tie up a lot of staff just to teach people how to use it. If it is too complex, people will abandon it, and all your great intentions will go to a waste. Testing a system is critical on people who have absolutely no familiarity with the machine before rolling it out. This is particularly critical when the system is intended for employees who don't normally operate computers. Plus do it slowely one at a time "You can't give employees everything on Day 1; they'll never be able to absorb it all," **(Marien Kaifesh), corporate HRIS manager for Parker Hannifin Corp. in Cleveland.* "Take small steps to gain employee confidence; keep adding more and more transactions until even the 'die-hards' will have to adopt the technology." "[Our] employees like self-service and would like to see it expanded, It has been a very exciting and worthwhile undertaking." (Kaifesh) Once you move the kiosks into place, you can look forward to a lightening of the routine workload, as well as a demand for further services from employees and other departments, as Time Warner Cable's Tipton learned.

> *Drew Robb is a California-based freelance writer who specializes in technology, engineering and business.*

Appendix E

Future Role of IT in Business Process Reengineering Benchmarking Report

Executive summary and report highlights

Two hundred and five companies from 44 countries participated in ProSci's benchmarking study on the future role of IT in business process reengineering. The purpose of the study was to:

examine the current and future role of IT in business process reengineering

provide reengineering teams and IT organizations with information on how to optimize their success with reengineering projects

Study participants included:

consultants (both IT and management consultants)

IT managers and staff

operational managers and staff

Finance and banking along with product development and manufacturing were the two largest industry segments represented. Other industries included were health care, government, tele-communications, customer service, education, utilities, pharmaceuticals and retail.

Current IT role and performance

In nearly 50% of reengineering projects, IT managers or staff had conflicts with the project team, and almost 80% of operational managers and staff rated IT support and performance as mediocre to poor. IT managers gave themselves slightly higher performance reviews, but still only 40% considered their performance very good or excellent.

Participants stated that the primary contributor to IT's poor reputation was their lack of operational knowledge and understanding of business needs. In some cases, IT failed to match technology to the desired business processes, was unable to meet commitments, or was not customer-service oriented.

IT managers and staff indicated that IT should be the driver in reengineering. In strong disagreement, operational managers and consultants stated that IT should be an enabler, a team member and a partner in the reengineering process.

The report lists the most common mistakes made by operational managers when working with IT, and what mistakes IT managers make when supporting their operational counterparts.

IT strategies and roles in the future

With regard to the future role of IT in business process reengineering, participants emphasized three roles:

Participate as a member of the reengineering team

Define technology solutions to enable new business processes

Implement the technology needed to support the new business processes

The single greatest contribution IT can make to reengineering projects is technology expertise and analysis.

IT competencies for the future

Participants agreed that the number-one competency needed by IT for the future is the ability to integrate business knowledge with technical knowledge. Participants advocated that IT become business analysts, knowledgeable about business needs and able to combine a business orientation with technical expertise.

Other findings

Three-quarters of participants were opposed to IT developing a vision of the future independent of their operational counterparts.
Participants overwhelmingly stated that it is not possible to reengineer business processes without IT support.
More than two-thirds of participants recommended the use of both internally-developed and off-the-shelf applications.
Highlights of the report
Current IT role and performance
What has contributed to the perception in many companies that IT is the "bad guy"?
Does IT believe they are the enabler or the driver of business process reengineering?
What mistakes do operational managers make when working with IT?
What mistakes do IT managers make when working with operational managers?

IT strategies and roles in the future

What should CIO strategies be for IT in the future?
What is the future role of IT in business process reengineering?
Steps IT should take to support future strategy
What are the biggest mistakes a CIO or IT/IS manager should avoid when supporting reengineering projects?
What are the most important activities or steps a CIO or IT manager can do to support a reengineering project?
What resources and competencies does IT need for the future?
Should IT develop its own technology vision of the future independent of their operational counterparts?
Is it possible to reengineer without IT support?
Should IT foster the use of internally-developed or off-the-shelf applications?
What is IT's single greatest contribution to reengineering projects?

IT role on new projects

Most critical "must not do" items
Most critical "must do" items
Participant information
Definition of terms
The report is only available with the purchase of the 1999 Best Practices in Business Process Reengineering report.

HRIS

For years, human resources were dependent upon paper documentation and administrative record-keeping. Human resources retained their traditional duties with little significant change in how those duties were performed. Recently, a preponderance of new processes and technologies has revolutionized how human resource practitioners perform their jobs. The emergence of information and management systems has been integral to this revolution.

A human resources information system (HRIS) is a system of software and supporting computer hardware specifically designed to store and process all HR information. Also known as HRMS, human resources management systems or less commonly, HRIMS, these systems are the mainstay of modern HR departments. Traditionally, human resources departments relied on multiple programs in each department. An HRIS integrates all of these programs through a common database and single-user interface. An HRIS combines separate HR systems into a centralized database that performs the majority of HR transactions. HRIS are particularly useful for payroll and benefits administration. A sophisticated HRIS will simplify transactions, automate administrative tasks, and minimize paperwork. It provides a consolidated database to coordinate self-service technologies. Employee self-services such as intranets, kiosks, and voice response systems (VRUs) are dependent upon an HRIS to be effective. Through system integration, an HRIS will reduce duplication and error while improving access to employee information.

HRIS are increasingly considered a necessary component of HR because of the increasingly global perspective of businesses. The combination of new technology and the subsequent loss of physical boundaries requires comprehensive HR systems that can maintain one database while incorporating a diversity of additional systems and capabilities. The potential for efficiency presented by an HRIS can be significant. Because an HRIS automates the bulk of transactional work, HR staff have increased time to perform strategic functions.

WEB BASED TOOLS

HR Manual

Generate a professional employee handbook in 10 minutes. Customize it to suit your company's needs. Your HR manual will cover technology and email, sexual harassment, leaves of absence and more.

Hiring Forms

Use our hiring forms templates to create professional documents for each stage of your hiring process!

InfoLink Screening Services, Inc.

Save time and money. Do background checks and get "hiring insurance" before you make a job offer.

The Keirsey Temperament Test

A fun place to take the Keirsey Temperament and Character tests.

KnowledgeDisk

For virtual office management, Knowledgedisk provides a simple and easy way to share files over the internet, with no special software other than a standard internet browser.

Manage Your Human Resources Online
Intraforce offers growing companies an integrated web-based intranet, payroll and human resource system.

Online Psychometric Test
Determine in advance whether people are likely to do well in a certain job. Use as part of a training program, performance management, team building, organisation development or outplacement process.

TimeTracker
Track your time and expenses from a PC, phone or Palm organizer with TimeTracker's Web-based invoicing and time-tracking application.

SOFTWARE **Watchdog Software Inc.**
Watchdog Unemployment Cost Control Software™ is an easy to use Unemployment Compensation tracking package. Employers can now effectively protest unemployment claims filed against their tax account without the need to outsource to expensive law firms or Unemployment Cost Control Vendors.

OTHER TOOLS & SOFTWARE
Human Resource Applications at CNET

Appendix F

A free essay on Human Resources

Technology and the Future of Work Every society creates an idealised image of the future - a vision that serves as a beacon to direct the imagination and energy of its people. The Ancient Jewish nation prayed for deliverance to a promised land of milk and honey. Later, Christian clerics held out the promise of eternal salvation in the heavenly kingdom. In the modern age, the idea of a future technological utopia has served as the guiding light of industrial society. For more than a century utopian dreamers and men and women of science and letters have looked for a future world where machines would replace human labour, creating a near workerless society of abundance and leisure. (J Rifkin 1995 p.42) This paper will consider developments in technology, robotics, electronic miniaturisation, digitisation and information technology with its social implications for human values and the future of work. It will argue that we have entered post modernity or post Fordism, a new age technological revolution, which profoundly effects social structure and values. Some issues that will be addressed are: elimination of work in the traditional sense, longevity, early retirement, the elimination of cash, the restructuring of education, industry and a movement to global politics, economics and world government. In particular this paper will suggest that the Christian Judao work ethic with society's goals of full employment in the traditional sense is no longer ap Copyright © 1999-2004 Essaycrawler, LLC

Humanity and Technology

> *Tools once helped early man increase his survivability, and they became more and more useful as means to achieve our goals. Today, innovations in technology have allowed us to fabricate tools of increasing complexity. As we recognize that the most effective tools have human characteristics, such as a computer capable of learning, we will give our tools these characteristics. If technological innovations continue, we could actually create tools that are human, or at least beings that challenge how we define being 'human.' Ridley Scott's Blade Runner and James Cameron's Terminator 2 offer two particular scenarios of futures in which the state of technology gives us the ability to do "questionable things." As we give our machines selected human characteristics to make them more efficient, they will tend to discover humanity in their own unique way, rising above their 'specifications' to actually become human. By definition, tools are designed specifically for certain tasks, and as technological tools, the T800 and the replicant are deigned to meet specific specifications. In Terminator 2, the T800 is a multipurpose cyborg assigned to save John Connor, given a series of "mission parameters," initially characterized by his computer*

Table of Contents

Table of Contents