2005

Effective Knowledge Management (KM) strategy within a business organization

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Effective Knowledge Management (KM) Strategy within a Business Organization

By

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Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Information Technology

Department of Information Technology
Rochester Institute of Technology

February 9, 2005

Version 2.0

Rochester Institute of Technology

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of
Computing and Information Sciences

Master of Science in Information Technology

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ABSTRACT

A cohesive Knowledge Management (KM) strategy is found at the cornerstone of every successful business enterprise's overall business strategy. The full benefit of this strategy can only be achieved through a dynamic, technology-enabled framework that encourages best and better practices to capture the outputs of human innovation and creative knowledge.

Competitive pressures and technological convergence, most prevalent in high technology business sectors, have demonstrated the critical need for an information strategy that can harness and discern the continual amass of intellectual property. The continual accumulation of information and knowledge critical to the sustained viability of many business organizations, presents significant and complex management challenges. The dynamic changes in economic conditions and technical innovation and advance, coupled with the need to manage the outputs of human innovation and creative capacity, continues to present a paradigm shift from the traditional management approaches to more adaptive, dynamic, non-traditional management approaches and technology solutions.

A major KM challenge many organizations continue to face is no longer just how to capture and manage their intellectual property, but how to identify and discern between true intellectual content and simple information, the "real" knowledge of their business. A successful KM strategy becomes synonymous with the overall business strategy, and includes the requirement for a process model that provides a framework that can be adapted to an ever-changing business model. This framework must

provide the ability to identify and discern between static data or information and dynamic intellectual property, which the latter is often the direct output of human creativity and innovation.[1]

Accordingly, one important aspect of KM as a practice is the development of knowledge transfer systems. However, the one-size-fits-all approach to the technical solution is only part of the success equation.[2] The other critical element in the equation is the approach to integrate it into the related business process framework. The means of specific process improvement may vary based on business requirements and scope of technical solution, but the underlying basis of need for change or improvement remains a constant. A foundational framework for business process strategy and execution takes on much greater significance as part of the overall business strategy.

Thomas A. Stewart, a member of the board of editors at Fortune Magazine, says "Because knowledge has become the single most important factor of production, managing intellectual assets has become the single most important task of business." This paper will focus on the discipline of knowledge management and associated knowledge transfer practices in a pragmatic context to illustrate its importance as an integral component of a successful business strategy. This includes the perspectives of both as strategic asset in the management of intellectual capital, and as an enabling technology to leverage the intellectual capital for business fulfillment. The assertions

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[1] Yogesh Malhotra, "Knowledge Management for E-business Performance: Advancing Information Strategy to Internet Time"; *Information Strategy, The Executive's Journal*, Summer 2000, vol. 16 (4), pp. 5-16

[2] James Conlan, "Improving Business Processes", *KMWorld*, November/December 2001, pp. S13.

and discussions put forth, while centered on knowledge management, can be paralleled for several IT-centric business disciplines. However, the analysis of the research and case studies referenced in this paper will illustrate the growing breadth and importance of knowledge assets as the primary cornerstone in a broad spectrum of business disciplines. More importantly, it will clearly demonstrate the critical need to effectively manage and control knowledge assets for competitive advantage as part of the overall business strategy.

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ACKNOWLEDGMENTS

The author wishes to acknowledge his wife, Laurie, for her support, advice, and boundless encouragement during the writing of this thesis. The author also wishes to also thank Laurie for her support throughout the entire Master's degree coursework and capstone experience. An earnest appreciation goes out to my thesis committee for their support and cooperation in the months and weeks leading up to the completion of this thesis and defense presentation.

Finally, the author wishes to thank the reader in advance for their interest in reading this thesis and the topical discussions within. It is hoped that it will be of some value and provide some basis for newly acquired knowledge.

Chapter 1

INTRODUCTION AND TOPICAL FOCUS

A cohesive Knowledge Management (KM) strategy is found at the cornerstone of every successful business enterprise's overall business strategy. The full benefit of this strategy can only be achieved through a dynamic, technology-enabled framework that encourages best and better practices to capture the outputs of human innovation and creative knowledge.

One definition of KM offers that it's the name of a concept in which a business organization consciously and comprehensively gathers, organizes, shares, and analyzes its knowledge in terms of resources, documentation, and people skills.[3] When viewed across the enterprise business domain, this definition also pretty clearly describes what is otherwise known as the 'intellectual capital' or 'knowledge assets' of most business organizations. Additionally, when viewed in this context, a pretty direct inference can be drawn to show this encapsulates the key (business) core competency(s). Because the true value of every business enterprise can be measured in the organization's ability to effectively manage and exploit these assets, the underlying process mechanisms and enabling technology framework to manage these and other core business assets, becomes a critical factor to any successful business strategy.

Through much of the 1990's, few business organizations actually had a formal, comprehensive knowledge management practice in place. Steady advances in enabling technologies, has

[3] Knowledge management. http://searchdomino.techtarget.com/sDefinition/0,,sid4_gci212449,00.html

reshaped the pace and manner that information is shared and accessed. Today, many business organizations now have some kind of knowledge management framework in place. Those organizations that enjoy the most success can be found to have an integral knowledge management discipline as part of their core business process activity.

After a review of some of the voluminous information found on KM, offering broad and varying views of its definition and real scope or focus, one may conclude there doesn't appear to be a standard consensus on the real breadth or valuation of the KM discipline. However, a theme that has evolved is the knowledge that exists in the minds of organizational members is the organizational resource with the greatest value.[4] Simply stated, harness the knowledge of the organization and you will harness its true wealth. This "wealth" of organizational knowledge is generally referred to by one of several labels including intellectual property, intellectual capital, knowledge capital, and knowledge assets. These terms can and will be used interchangeably throughout this discussion. Hence again, the effective management of this knowledge base becomes paramount for a successful business strategy, both as measured through competitive advantage and economic sustainment.

One perspective that supports the notion that KM, formal or informal, provides an integral component of a successful business strategy, could be described in the following terms: "Knowledge Management caters to the critical issues of organizational adaption, survival and competence in face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek a synergistic combination of data and information

[4] Yogesh Malhotra, "Current Business Concerns and Knowledge Management", 1997, [WWW document]. URL http://www.brint.com/interview/times.htm

processing capacity of information technologies, and the creative and innovative capacity of human beings."[5] The inference here is that KM, by its rudimentary definition, is indeed (primarily) a process domain. Not a single process domain, but embedded as part of the overall business process infrastructure.

Different KM perspectives illustrate its process-centric nature. First, KM can be viewed as increasingly more important because of the shift from a predictable world paradigm to one governed by discontinuous change. The very nature of today's global economy is evidence of this dynamic. Second, it is essential for organizational survival in the long run, given that knowledge creation is the core competence of any organization. This knowledge may relate to new products or services, to new product and service definitions, to new industry definitions, or to new channels of distributions. Third, it is not a separate function characterized by a separate KM department or a KM process, but is embedded into all organization's business processes. Fourth, latest advances of information technology can facilitate the processes such as the gathering, distribution, or dissemination of information. This becomes the enabling framework. However, the final process owness is on the people's ability to translate this information into "actionable knowledge". This ability assumes an understanding of the particular business' functional context. A sound or comprehensive enabling plan doesn't necessarily ensure the creativity and innovation that is necessary for organizational competence. However, the effective utilization of enabling technologies is an integral

[5] Yogesh Malhotra, "Current Business Concerns and Knowledge Management", 1997, [WWW document]. URL http://www.brint.com/interview/times.htm

requirement that needs to be carefully synchronized with effective utilization of the creative and innovative capacity of the people capacity involved.[6]

Effectively, every business enterprise has some form and breadth of knowledge repository as part of its basic comprise. This knowledge repository is often supported by a unique process foundation, formal or informal, that serves to create access network for the knowledge base that comprise these business-specific assets and competences. The business's knowledge base includes its technological competencies as well as its knowledge of customer needs and supplier capabilities. These competencies reflect individual skills and experiences as well as distinctive ways of doing things within the business organization. The essence of the organization is its ability to create, transfer, assemble, integrate, and exploit knowledge assets. Knowledge assets underpin competencies, and competencies in turn underpin the organization's product and service offerings to the marketplace. Competitive advantage can be attributed not only to the ownership of knowledge assets and other assets complimentary to them, but also to the ability to combine knowledge assets with other assets needed to create value.[7]

This paper will take a relatively strategic view of Knowledge Management. The topical focus in this discussion will not try to focus any particular KM dimension. However, some dimensional aspects will be used as examples, to help present the broader discipline in context to demonstrate that no matter what the application or knowledge component, KM is a logical

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[6] Yogesh Malhotra, "Current Business Concerns and Knowledge Management", 1997, [WWW document]. URL http://www.brint.com/interview/times.htm

[7] David J. Teece, "Knowledge and Competence as Strategic Assets", Handbook of Knowledge Management- Vol. 1, (Berline: Springer, 2003), Chap. 7, p.129.

extension of the business process domain. This presumption of KM as a logical extension of the business process domain is validated through its recognition as a business strategy, that information and knowledge are corporate assets, and a business needs strategies, policies, and tools to manage those assets.[8]

The increased level of ubiquity, afforded through the continuing evolution of KM enabling technologies and strategies, between the knowledge repositories and human access points, underscores the critical need for an integral process framework to ensure the cohesive management and the intuitive, ready access to the organization's knowledge repositories. This process framework and knowledge basis together should form a cornerstone of the overall business strategy.

[8] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Management Associates, 1997, http://www.media-access.com/whatis.html.

Chapter 2

THE MATTER OF KNOWLEDGE MANAGEMENT

A discussion of knowledge management, in any context, wouldn't be relevant or complete without some understanding of its' fundamental concepts or building blocks. There are many different perspectives that try to deal with the definition and application of KM, and many don't portray the discipline in any encapsulated fashion, but rather lend to the belief and emerging reality, that KM is truly a multi-disciplinary discipline. This belief is based on the understanding that an organization's knowledge repository exists in multi-faceted forms throughout the organizational comprise, and that the knowledge transfer relationship is dynamic across the creators and consumers that knowledge is disseminated.

An important caveat serves as a preface to this discussion; knowledge should not be confused with information. The two are distinct concepts that function in completely different ways. Information is tangible, hard numbers, facts. Knowledge is intangible, mental awareness, a part of the process of learning, a "habit" burned into the mind.[9]

A review of some of these different perspectives is important to help demonstrate the multi or cross-discipline, process-centric nature of KM. This helps provide a basis to better understand the need for an underlying KM process framework and enabling technology, critical to a successful KM business strategy.

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[9] Robert Villegas Jr., "Knowledge Management White Paper", KMPeer Publishing, 2000.

2.1. The Knowledge of Knowledge Management

Knowledge Management can be defined differently based on the contexts that it's viewed. This discussion focuses primarily on the context of KM as part of the overall business strategy. A few different definitions should be reviewed and discussed to properly frame it for this context.

One definition looks at knowledge management as an oxymoron. Knowledge is often viewed as more cognitive and personal, while management infers organizational and process contexts. Those who possess the knowledge, the people or workers, are not by nature always open to a formal control or structure applied to something so often unstructured and sometimes personal. Recognition that a knowledge base is a key corporate asset to competitive advantage, forces a business to continually evolve a strategy to harness and manage this knowledge.[10]

Another view of the same definition views KM in similar context as an oxymoron. While not as direct or complete, it illustrates the contrast that exists because of two competing and sometimes contentious KM dynamics. The relative business significance is to find a harmonious balance for these two elements to exist such to provide synergistic focus in support of the overall business plan and strategy.

A more technically based definition can provide more insight into the basis and distinct comprise of these two primary elements. This includes different aspects that must be understood and addressed as part of the overall business strategy.

A more technical KM definition is the explicit and systematic management of key knowledge and associated processes of creating, gathering, organizing, diffusion, use and exploitation. It requires turning personal knowledge into corporate knowledge that can be widely shared throughout a business and appropriately applied when and where necessary.[11] Tasks associated with this knowledge sharing would include; problem solving, corporate learning, strategic planning, and decision making.

Another definition describes knowledge management as a business activity with two primary aspects:

- Treating the knowledge component of business activities as an explicit concern of business reflected in strategy, policy, and practice at all levels of the organization.
- Making a direct connection between an organization's intellectual assets, both explicit (recorded) and tacit (personal know-how), and positive business results.[12]

A final definition perspective pulls apart the two parts of the term "knowledge management."

Knowledge- Knowledge is part of the hierarchy made up of data, information, knowledge and wisdom. Data are raw facts. Information is facts with context and perspective. Knowledge is information with guidance for action. Wisdom is to understand which knowledge to use for what purpose.

Management- Management is part of another hierarchy that includes supervision, management and leadership. Supervision is dealing with individual tasks and people and

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[10] David J. Skyrme, *Knowledge Management: Making Sense of an Oxymoron*, Insight,, David Skyrme Associates, 1997-2003.

[11] David J. Skyrme, *Knowledge Management: Making Sense of an Oxymoron*, Insight,, David Skyrme Associates, 1997-2003.

[12] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

works at the operational level of an organization or sub-unit. Management is dealing with groups and priorities at the tactical level. Leadership is dealing with purpose and change at the strategic level.[13]

Hence, knowledge management is concerned with the exploitation and development of the knowledge assets of an organization with a view to furthering the organization's objectives.

[13] Suresh Hemamalini, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management, Sept. 2002.

2.2. The Nature of Knowledge- Tacit vs. Explicit

Any discussion about knowledge management must include some discussion about the knowledge itself. Specifically, the nature of that knowledge and the context it's represented to understand how it will be used in the fulfillment of KM objectives.

Noted philosopher Michael Polanyi mentioned, "We can know more that we can tell".[14] According to Polanyi, knowledge that can be expressed in words and numbers only represents the tip of the iceberg of the entire body of possible knowledge. Polanyi classified human knowledge into two categories:

Tacit Knowledge

Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate of share with others. Subjective insights, intuitions and hunches fall into this category of knowledge. It is deeply rooted in and individuals' actions and experience as well as in the ideals, values, or emotions he or she embraces. Its' personal quality makes it hard to formalize and communicate. Japanese view knowledge as being primarily tacit, something not easily visible and expressible.[15]

There are two dimensions to tacit knowledge:

- Technical dimension- encompasses the kind of informal personal skills of crafts often referred to as 'know-how'.

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[14] M. Polanyi, "The Tacit Dimension", London :Routledge & Kegan Paul, 1966.

[15] M. Polanyi, "The Tacit Dimension", London :Routledge & Kegan Paul, 1966.

- Cognitive dimension- consists of beliefs, ideals, values, schemata and mental models, which are deeply ingrained in us and which we often take for granted. While difficult to articulate, this cognitive dimension of tacit knowledge shapes the way we perceive the world.[16]

Explicit Knowledge

Explicit knowledge is codified knowledge that can be transmitted in formal, systematic language. It is discrete or 'digital'. It is captured in records of the past such as libraries, archives and databases and is assessed on a sequential basis. It can be expressed in words and numbers and shared in the form of data, scientific formulate, specifications, manuals and the like. This kind of knowledge can be readily transmitted between individuals formally and systematically.[17]

To visualize how tacit and explicit knowledge are shared and transformed, Japanese professors Ikujiro Nonaka and Hirotaka Takeuchi developed the matrix in *Figure 2.2-1* that describes the transitions between tacit and explicit forms.[18]

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[16] M. Polanyi, "The Tacit Dimension", London :Routledge & Kegan Paul, 1966.

[17] M. Polanyi, "The Tacit Dimension", London :Routledge & Kegan Paul, 1966.

[18] William L. Miller and Langdon Morris, 4th Generation R&D Managing Knowledge, Technology, and Innovation, John Wiley & Sons, 1999.

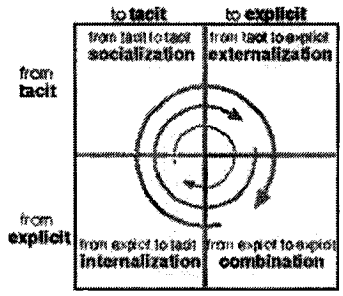

Figure 2.2-1 Tacit and Explicit knowledge

The upper right quadrant shows that when tacit knowledge is made explicit it is externalized, made manifest in spoken words, writings, or tangible objects. Researchers seek to do just this, rendering the hidden tacit forms explicit and therefore applicable in the innovation process. Explicit knowledge is made tacit when it is internalized through experience. A pilot reads the F-117 instruction manual and then flies the aircraft to develop a feel for flight that cannot be expressed. Through such experience, the descriptions in the manual are translated into an appreciation of the actual flight characteristics of the plane. The matrix also shows that tacit knowledge can be shared from one person to another without being made explicit, the process of socialization that is used in advertising to convey social meanings that are powerful even as they are intended to remain at the unconscious level. In the fourth quadrant, combination occurs when explicit knowledge is shared and integrated through learning.[19]

Other knowledge experts, such as Leif Edvinsson of Skandia, further divide knowledge in a business context into individual, organizational, and structural knowledge components. Individual knowledge is solely in the minds of the employees. Organizational knowledge is the

[19] William L. Miller and Langdon Morris, 4th Generation R&D Managing Knowledge, Technology, and Innovation, John Wiley & Sons, 1999.

learning that occurs at the group or division level. Structural knowledge is embedded in the "bricks" of the corporation through processes, manuals, business standards, etc. Knowledge in the form of any three of these states can be either tacit or explicit.[20]

The traditional perceptions of the role of knowledge in business organizations often view *tacit knowledge* as the real key to getting things done and creating new business value. The same is not true for *explicit knowledge.* This places a bias towards an emphasis on the "learning organization" and other approaches that stress internalization of information (through experience and action) and generation of new knowledge through managed interaction. However, observing how knowledge is acquired and how knowledge can be applied, whether tacit or explicit, in order to achieve a positive result that meets business requirements is an important task in the business strategy execution.[21]

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[20] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 1, p.4.

[21] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

2.3. Knowledge Management: A Cross-Disciplinary Domain

One aspect that helps assert the case for KM as an integral component of the overall business strategy is to better understand its cross-disciplinary nature. The cross-discipline aspects can be largely categorized into people, process, or technology. A review of some of these different dimensions will help demonstrate this assertion.

A business' knowledge management system draws on a wide range of disciplines and technologies.

- *Cognitive science-* insights from how we learn and know will certainly improve tools and techniques for gathering and transferring knowledge.[22]

Knowledge platforms include expert systems, artificial intelligence (AI), and knowledge base management systems (KBMS). Though the results of these types of systems have yielded a questionable reputation to meet expectations, they continue to evolve and be widely deployed.[23] Some examples include:

- *Computer-supported collaborative work (groupware)-* Lotus Notes is a well-known product in this area. Sharing and collaboration are core elements of (organizational) knowledge management.

- *Library and information science-* the body of research and practice in classification and knowledge organization that makes libraries work will be even more vital as

[22] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

[23] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

information in business grows exponentially. Tools for thesaurus construction and controlled vocabularies are already helping manage knowledge.

- *Technical writing*- as a professional activity, technical writing, or technical communications, forms a body of theory and practice that is directly relevant to effective representation and transfer of knowledge.

- *Document management*- originally concerned primarily with managing the accessibility of images, document management has moved on to making content accessible and re-usable at the component level. This is a predominant "knowledge activity" in most businesses today.

- *Decision support systems*- primarily concerned with the harnessing and transfer of knowledge within organizations to produce knowledge repositories to facilitate helping (knowledge) workers in the performance of cognitive tasks, and to integrate the knowledge base into the decision-making processes of the business organizations.

- *Semantic networks*- semantic networks are formed from ideas and typed relationships among them, but with far more systematic structure according to meaning. Often applied in such tasks as textual analysis, and a multitude of other ways to represent domain knowledge in an explicit way that can be shared.

- *Relational and object databases*- although relational databases are currently used primarily as tools for managing "structured" data, and object-oriented databases are considered more appropriate for "unstructured" content, only recently has development begun to apply the models on which they are founded to represent and manage knowledge resources.

- *Simulation*- a component technology of knowledge management, that refers to computer simulations, manual simulations, as well as role-plays and micro arenas for testing out skills.

- *Organizational science-* the science of managing organizations that are increasingly focused on the need to manage knowledge.[24]

Other technologies include: object-oriented information modeling; electronic publishing technology, hypertext, and the World Wide Web; help-desk technology; full-text search and retrieval; and performance support systems.

The activities found in knowledge management programs also illustrate its' cross-disciplinary nature through people, process, and technology. Examples of these activities include:

- Appointment of a knowledge leader - to promote the "knowledge agenda", and develop a framework
- Creation of knowledge teams - people from all disciplines to develop the methods and skills
- Development of knowledge bases - best practices, expertise directories, market intelligence etc.
- Enterprise intranet portal - a 'one-stop-shop' that gives access to explicit knowledge as well as connections to experts
- Knowledge centers - focal points for knowledge skills and facilitating knowledge flow
- Knowledge sharing mechanisms - such as facilitated events that encourage greater sharing of knowledge than would normally take place
- Intellectual asset management - methods to identify and account for intellectual capital[25]

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[24] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

The cross-disciplinary nature of KM illustrates its broad impact through the number of business disciplines it touches throughout an organization. This underscores the impact knowledge management, in any form, has on the organization. A well-managed KM strategy can have immense business value, and provide a foundation to leverage for continued growth and success.

[25] David J. Skyrme, *Knowledge Management: Making Sense of an Oxymoron*, Insight., David Skyrme Associates, 1997-2003.

2.4. The Practice of Knowledge Transfer

The transfer of knowledge within an organization is focused on finding out what you know (competency), and then using it improves performance to gain competitive advantage.[26] This must occur dynamically, at all levels of the organization, for a business to sustain and remain viable.

Knowledge transfer has always been a challenge for organizations. The importance of knowledge has grown in recent decades for primarily three related reasons. First, knowledge appears to be an increasing proportion of many business' total assets. Second, businesses continue to transition away from hierarchical methods of control towards more decentralized organizational structures and increased employee involvement. This has resulted in more creativity by lower level employees and groups, but fewer obvious organizational paths through which the transfer can occur. Finally, advances in information technology have created new means of knowledge transfer. Innovations such as Lotus Notes, the Internet, and intranets all hold the potential for increased diffusion of innovations. However, technology alone cannot solve the problem of knowledge transfer; organizational structures and practices must facilitate and motivate knowledge transfer.[27]

The real value of knowledge transfer is realized when it is successfully integrated into the overall business process infrastructure, allowing for dynamic knowledge generation and capture. In principle, knowledge transfer can be broken down into distinct stages. Following

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[26] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 41, p.27.

[27] David I. Levine and April Gilbert, *"Managerial Practices Underlying One Piece of the Learning Organization"*, Institute of Industrial Relations, University of California, Berkeley, 1999.

are five steps that describe the process: idea creation, sharing, evaluation, dissemination, and adoption:

1) *Creation*- simply, knowledge needs to exist before it can be transferred and managed. Volumes of information exist on how to define and promote creativity. Companies need to evaluate the cognitive nature of their workers, their interactions, and innovative abilities to identify where and how relevant knowledge is created within the organization.

2) *Sharing*- primarily, sharing refers to the need to expose others to the idea in order for it to be evaluated. In actuality, sharing is often combined with validation and dissemination. Dissemination takes place once the idea has passed some minimum level of evaluation.

3) *Evaluation*- organizations must evaluate new ideas to see what's worked in the past, what's likely to work at new places, and what's likely to actually work at new places. Employees must have the capability, incentives, and structures to perform the validation studies. One example at Xerox, skilled technicians evaluate new ideas; the best are added into a best practices database for others to learn from. This knowledge practice is becoming more common in other business organizations.

4) *Dissemination*- how people access knowledge. A common conception is more information is better than less. However, at the same time, too much information can create overload. The Internet is a classic example of the latter conception. The key to disseminating knowledge is that people receive it, can use it.

5) *Adoption*- a measure of knowledge transfer success. If the right knowledge is given to people, but the fail to adopt, then knowledge transfer is incomplete. Some reasons this may occur include; inadequate capability, poor incentives, and inadequate structures or processes to disseminate.[28]

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[28] David I. Levine and April Gilbert, *"Managerial Practices Underlying One Piece of the Learning Organization"*, Institute of Industrial Relations, University of California, Berkeley, 1999.

Organizations focus a lot about promoting creativity and innovation. Often though, many useful ideas already exist in some form. The key is to capture the existing knowledge from within, and outside, the organization and adopt those ideas that are relevant. A true "learning organization" must acknowledge the importance of all phases of knowledge creation and transfer and endeavor to create a culture of sharing and continuous improvement.[29]

Focus placed on some knowledge transfer stages but not others are less effective than moving along with all stages in an integrated fashion. Creating knowledge but not sharing it, or finding that other groups cannot learn it, makes knowledge creation less relevant. This is a common challenge for many businesses seeking to improve processes for competitive advantage.[30]

A final observation, true knowledge integration involves self-reflection, doing cost-benefit and cost-effectiveness analysis, and continuous improvement of the learning and knowledge processes. This effort must be dynamic and continuous throughout a business' lifecycle. The risk of not overcoming obstacles that impede knowledge transfer is to become stagnant in breeding new ideas, and subsequently yielding competitive advantage.

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[29] David I. Levine and April Gilbert, *"Managerial Practices Underlying One Piece of the Learning Organization"*, Institute of Industrial Relations, University of California, Berkeley, 1999.

[30] David I. Levine and April Gilbert, *"Managerial Practices Underlying One Piece of the Learning Organization"*, Institute of Industrial Relations, University of California, Berkeley, 1999.

2.5. The Business Value of Knowledge Management

Another common theme that can be acknowledged about Knowledge Management is the claim as one of a business' most valuable assets. Accordingly, KM needs to be defined as a key objective as part of the overall business strategy. Stated as an objective, a business can define and prioritize what knowledge should be captured, organized, managed, and shared within the respective disciplines of the business. This provides a basis to help quantify the knowledge base into some form of value to the business. The knowledge value may not be as quantifiable or tangible as business measurements, but must be recognized as a primary resource for economic sustainment.

The criticality of knowledge-based assets in the overall business strategy can be examined by looking at the current global economic conditions. The current business climate can be characterized by a shift from a world of predictable, incremental, and linear change to that of radical and discontinuous change that seems to have global implications.[31] The hi-tech industries are probably the best example of this assertion. Technology in several forms has become increasingly more disposable, both in hardware and software technology markets. This makes the knowledge base the primary constant in the business drivers, yielding an ever changing mix of products and/or services to meet the changing market demands and conditions.

This can also be pretty directly asserted against KM itself, the challenge of continually trying to assess what is or is not relevant knowledge to the business at any given time. Businesses

struggle with this transformation. The paradigm of trying to predict future business needs (competence) based on the past surfaces the tough questions trying to determine relevant knowledge. The questions a business must ask itself all center around a common theme associated with KM; "What do we know, who knows it, what do we not know that we should know?"[32] This will require a realization that sustainable organizational competence depends upon an organization's capacity for creating new knowledge through an ongoing and continuous process of learning and unlearning.

A review of the specific business and economic issues businesses currently face globally, can depict the significance and importance of KM in the context of business value, more clearly. A "Position Paper on Knowledge Asset Management", published by Ann Macintosh of the Artificial Intelligence Applications Institute (University of Edinburgh) identifies some of the specific business factors and issues they face.[33] These include:

- Marketplaces are increasingly competitive and the rate of innovation is rising.
- Reductions in staffing create a need to replace informal knowledge with formal methods.
- Competitive pressures reduce the size of the work force that holds valuable business knowledge.
- The amount of time available to experience and acquire knowledge has diminished.
- Early retirements and increasing mobility of the work force lead to loss of knowledge.

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[31] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management, Sept. 2002.

[32] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

[33] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

- There is a need to manage increasing complexity, as small operating companies are trans-national sourcing operations.

- Changes in strategic direction may result in the loss of knowledge in a specific area.

Additional observations that could be added to the list above:

- Most of our work is information based.

- Businesses compete on the basis of knowledge.

- Products and services are increasingly complex, endowing them with a significant information component.

- The need for life-long learning is an inescapable reality.

The summary above establishes the management of the knowledge base of the business as the focal point for both the source of some of the greatest problems, and the source to realize some of the greatest benefits as a measurement of business value. Effectively managing knowledge as a business asset represents a primary opportunity for achieving substantial savings, significant improvements in human and process performance, and increased competitive advantage.

This notion can be further supported looking at knowledge from an action-oriented perspective as the primary basis for competitive advantage. All the knowledge transfer mechanisms, enabling technologies, and the finite data elements of the business cannot ensure competitive advantage over the long-term. Only translating information and decisions into actionable value propositions can assure competitive advantage. Hence the assertion,

knowledge lies in actions. These actions include the effective utilization of data and information resources for decision basis and execution.[34]

As mentioned throughout this discussion, Knowledge Management as a discipline continues to emerge as a core business strategy. Globally, more businesses continue assess and implement KM oriented strategies to manage and leverage their organizational knowledge, focused on achieving sustainable business advantage and increased business value.

[34] Dr. Yogesh Malhotra, "Is knowledge the ultimate competitive advantage?", BUSINESS MANAGEMENT ASIA, September, 2003, Q3/4, pp. 66-69.

Chapter 3

BUSINESS PROCESS IN ORGANIZATIONS

This paper has primarily focused on Knowledge Management in the context as a functional entity. A significant observation that has been noted and discussed is that KM is a process-centric entity, and represents a fairly substantial process domain for many business organizations. Inherent, this has revealed the leverage this discipline provides relative to the overall business performance, and the associated business value (or cost) that is realized through its execution as part of the business strategy.

An important component in correlating the significance of knowledge management as part of an organization's overall business strategy, needs to include a foundational understanding of the business process concepts integral to any process-based business strategy. This includes core concepts, current process trends, and a review of specific process models that demonstrate the implementation and execution of knowledge-based or other process strategies.

3.1 Business Process Overview

A process-centric view of business reveals a broad collection of processes that are involved in the primary goal of delivering a product or service to a customer. Managing the key processes efficiently and effectively is a critical factor in any business success measure. However, the processes are not standalone in practical application. Many interact and are interdependent across different disciplines and functions.[35]

Another perspective defines business process as "a set of logically related tasks performed to achieve a defined business outcome." A process is "a structured, measured set of activities designed to produce a specified output for a particular customer or market. It implies a strong emphasis on how work is done within an organization."[36] This definition reveals that processes have two important characteristics; 1) they have customers (internal or external), and 2) they cross organizational boundaries (i.e. they occur across or between organizational subunits).

Generally, processes are identified in terms of beginning and end points, interfaces, and organizational interfaces. Additionally, all processes should have a process owner, responsible for the ongoing management tasks to ensure the process is administered effectively and efficiently.

Processes can be defined based on three dimensions:

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[35] Don L. Redinius, "*The Convergence of Six Sigma and Process Management*", BPTrends, December, 2004, p.2.

[36] Yogesh Malhotra, "Business Process Redesign: An Overview", 1996, [WWW document] URL http://www.brint.com/papers/bpr.htm.

- *Entities*- processes take place between organizational entities. They could be inter-organizational (e.g. data interchange), inter-functional (e.g. collaboration), or inter-personal (e.g. CSCW- Computer-Supported Cooperative Work).

- *Objects*- processes usually result in the manipulation of entities. These entities could be physical or informational.

- *Activities*- processes could involve two types of activities; managerial (e.g. develop a budget), and operational (e.g. fill a customer order).[37]

Also, processes may be viewed in three different forms:

- First, there are processes executed via a computer. These are more commonly referred to as e-Business, ERP, CRM, PLM, or enterprise computing applications.

- Second, there are more traditional human value-added processes, also called human-to-human workflow processes.

- The first two process types coexist and interact to create a third type, where human workflow is augmented by information workflow.[38]

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37 Yogesh Malhotra, "Business Process Redesign: An Overview", 1996, [WWW document] URL http://www.brint.com/papers/bpr.htm.

38 Don L. Redinius, *"The Convergence of Six Sigma and Process Management"*, BPTrends, December, 2004, p.2.

3.2 Current Business Process Trends

The process-centric nature of Knowledge Management lends itself to a slightly broader view of the business process domain as a whole. Today, evidenced through the steady stream of mergers and acquisitions, the criticality of managing the convergence of disparate process domains has become a significant challenge to businesses large and small. Centered at the crux of this challenge burns the question, how to best share the right knowledge, from the right organization, for the right objective, at the right time, with the right people. The reality is all the elements of this question often reside a world apart. This underscores the need for a sound, holistic strategy that brings these elements together such the business objectives can be achieved.

The area within the business process realm that has received the most attention, and has been the subject of much discussion and analysis, is what has been commonly referred to as Business Process Reengineering (BPR). This would also include another common theme, the transfer of best practices. The basis for BPR has been in existence for several years, but the continued changes in business dynamics driven by the increased competitive demands of a truly global economy, has forced a transformation in BPR thinking and execution.

A brief review of BPR will provide a perspective that demonstrates how its transformation and reemergence provides a new, revitalized process domain that can be viewed as the nexus around which knowledge sharing and creation can thrive, and KM can be thought of as an

impetus of business process change.[39] This review focuses on its origin as a more transactional-based process paradigm and follows it as it transforms into a more cross-disciplinary focus, for managing the ever-increasing complexity of current business process requirements.

Business Process Reengineering can be defined as; "the critical analysis and radical redesign of existing business processes to achieve breakthrough improvements in performance measures", or a slightly different definition "the analysis and design of workflows and processes within and between organizations."[40] These definitions yield much the same result, change in the fundamental flow of knowledge or information within and between the different functional business domains.

Over the last couple of decades there has been a progression of methods for improving and redesigning business processes. During the 1980s, business process improvements were achieved through more incremental approaches, focused on ways to reduce variability and decreasing the number of defects in process outputs. The Total Quality Management (TQM) is one of the more notable process improvement initiatives to emerge during this period.[41]

The evolution of BPR design during the early-mid 1990s began to move towards a more cross-functional semblance of business process innovation. This was the period when information

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[39] Omar A. El Sawy and Robert A. Josefek, Jr., *"Business Process as Nexus of Knowledge"*, Handbook of Knowledge Management-Vol. 1, Chap. 22, p. 426.

[40] Yogesh Malhotra, "Business Process Redesign: An Overview", 1996, [WWW document] URL http://www.brint.com/papers/bpr.htm.

[41] Omar A. El Sawy and Robert A. Josefek, Jr., *"Business Process as Nexus of Knowledge"*, Handbook of Knowledge Management-Vol. 1, Chap. 22, p. 426.

technologies became a more integral component of the overall BPR structure. This was a significant step that allowed a vastly improved information flow through the organization. The evolution of the information (enabling) technologies allowed a more time-centric focus to emerge in response to the need to meet faster changing market demands. This entailed more focus on the cycle time of information flow the business, so process throughputs need to be fast, focused, and flexible.[42] The table shown in *Table 3.2-1* reveals the shift in emphasis during the progression of BPR evolution.[43]

Process Improvement (TQM) versus process innovation (bpr)		
	IMPROVEMENT	INNOVATION
Level of Change	Incremental	Radical
Starting Point	Existing Process	Clean Slate
Frequency of Change	One-time/Continuous	One-time
Time Required	Short	Short
Participation	Bottom-Up	Top-Down
Typical Scope	Narrow, within functions	Broad, cross-functional
Risk	Moderate	High
Primary Enabler	Statistical Control	Information Technology
Type of Change	Cultural	Cultural/Structural

Table 3.2-1

As BPR thinking continued to evolve into the late 1990s, the catalyst for a new level process capability that continues to expand today began to emerge. This has been driven primarily the significant changes in enabling technologies. The Internet and World Wide Web, specifically the collaborative capability it provides, has brought the realization to companies to focus on

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42 Omar A. El Sawy and Robert A. Josefek, Jr., *"Business Process as Nexus of Knowledge"*, Handbook of Knowledge Management-Vol. 1, Chap. 22, p. 427.

cross-enterprise process domains.[44] This focus has become a primary focus because of the impact mergers and acquisitions have on cross-enterprise domains, whether the merger or acquisition focus is inter-enterprise or intra-enterprise.

The cross-enterprise context of BPR and the associated enabling technologies that have evolved to provide a powerful and flexible process platform, have driven the need for more comprehensive process strategies to more fully leverage the ever expanding base of knowledge found across multiple, but interdependent, enterprise environments. The cross-disciplinary, process-centric nature of knowledge management directly aligns with the (BPR) need to support an environment where rapid learning and constant change are integral to executing the dynamic elements of the business strategy.

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43 Yogesh Malhotra, "Business Process Redesign: An Overview", 1996, [WWW document] URL http://www.brint.com/papers/bpr.htm.

44 Omar A. El Sawy and Robert A. Josefek, Jr., *"Business Process as Nexus of Knowledge"*, Handbook of Knowledge Management-Vol. 1, Chap. 22, p. 427.

3.3 Emerging Process Methodologies

The following provides a brief overview of some of the more prominent (enterprise) process methodologies currently employed by businesses that as a cornerstone of business strategy utilize their rich knowledge base as a primary means of competitive advantage.

Six Sigma

Six Sigma is a data-driven, quality focused process model and management philosophy developed by Motorola in the 1980s. The term is derived from the Greek letter *sigma*, a mathematical term that represents a measure of variation. The model is focused on eliminating defects, waste and quality control problems in manufacturing. The basic idea behind Six Sigma is that if one can measure the amount of "defects" in a process, one can systematically determine how to eliminate them, getting as close to zero defects (i.e. perfection) as possible. In order to achieve Six Sigma, the process cannot produce more than 3.4 defects per million opportunities (opportunity being defined as a chance for nonconformance or not meeting the required expectations).[45]

[45] "Six Sigma", online posting, <http://www.webopedia.com/TERM/S/Six_Sigma.html>, Webopedia, 10 December 2004.

Six Sigma is broken down into two different processes:

- Six Sigma DMADV - a process that defines, measures, analyzes, designs, and verifies new processes or products that are trying to achieve Six Sigma quality.

- Six Sigma DMAIC - a process that defines, measures, analyzes, improves and controls existing processes that fall below the Six Sigma specification.[46]

The Six Sigma process model, while more narrowly focused (typically) on a subset of the overall enterprise knowledge or information base, clearly illustrates the mechanisms that are integral to a successful knowledge management strategy. These mechanisms are equally effective applied at the functional level, or more commonly, the enterprise level. This demonstrates the continuity of process integrity achievable on both a micro and macro level within the knowledge base of the organization.

[46] "Six Sigma", online posting, <http://www.webopedia.com/TERM/S/Six_Sigma.html>, Webopedia, 10 December 2004.

Capability Maturity Model Integration

The Capability Maturity Model Integration (CMMI) process methodology is based on a best practices approach that addresses product development and maintenance. Practices that cover the product's life cycle from conception through delivery and maintenance are also included. There is an emphasis on both systems engineering and software engineering and the integration necessary to build and maintain the total product.[47]

A fairly clear and concise means to assess the relevance of CMMI to a business' overall KM strategy is to contrast it against common business objectives. The following summary of CMMI objectives illustrate the relationship that exists between the need for a robust process framework to support cross-enterprise, multi-disciplinary requirements, and the often vast knowledge base that must be managed and transferred throughout the enterprise.

- *Produce quality products or services-* the process-improvement concept in CMMI models evolved out of the Deming, Juran, and Crosby quality paradigm: Quality products are a result of quality processes. CMMI has a strong focus on quality-related activities including requirements management, quality assurance, verification, and validation.

- *Create value for the stockholders-* mature organizations are more likely to make better cost and revenue estimates than those with less maturity, and then perform in line with those estimates. CMMI supports quality products, predictable schedules, and effective measurement to support management in making accurate and defensible forecasts. This process maturity can guard against project performance problems that could weaken the value of the organization in the eyes of investors.

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[47] Mary Beth Chrissis, Mike Konrad, and Sandy Shrum, CMMI® Guidelines for Process Integration and Product Improvement, 1st Edition, (Addison Wesley Professional, 2003), Chap. 1.

- *Be an employer of choice-* Watts Humphrey has said, "Quality work is not done by accident; it is done only by skilled and motivated people." CMMI emphasizes training, both in disciplines and in process. Experience has shown that organizations with mature processes have far less turnover than immature organizations. Engineers in particular are more comfortable in an organization where there is a sense of cohesion and competence.

- *Enhance customer satisfaction-* meeting cost and schedule targets with high-quality products that are validated against customer needs are a good formula for customer satisfaction. CMMI addresses all of these ingredients through its emphasis on planning, monitoring, and measuring, and the improved predictability that comes with more capable processes.

- *Increase market share-* market share is a result of many factors, including quality products and services, name identification, pricing, and image. Clearly, customer satisfaction is a central factor, and in a marketplace, having satisfied customers can be contagious. Customers like to deal with suppliers who have a reputation for meeting their commitments. CMMI improves estimation and lowers process variability to enable better, more accurate bids that are demonstrably achievable. It also contributes to meeting essential quality goals.

- *Implement cost savings and best practices-* processes that are documented, measured, and continuously improved are perfect candidates for becoming best practices, resulting in cost savings for the organization. CMMI encourages measurement as a managerial tool. By using the historical data collected to support schedule estimation, an organization can identify and widely deploy practices that work, and eliminate those that don't.

- *Gain an industry-wide recognition for excellence-* the best way to develop a reputation for excellence is to consistently perform well on projects, delivering quality products and

services within cost and schedule parameters. Having processes that conform to CMMI requirements can enhance that reputation.[48]

The purpose of this summary isn't necessarily to validate CMMI as a preferred process model, but more importantly to show the CMMI model comprises a robust, knowledge-centric approach to managing the vast amount of information in complex knowledge leveraged environments. This type of process model enabled throughout the enterprise can have a significant impact on the business organization, specifically towards the most important goal, achievement of the business objectives.

[48] Dennis M. Ahern, Aaron Clouse, and Richard Turner, CMMI® Distilled: A Practical Introduction to Integrated Process Improvement, 2nd Edition, (Addison Wesley Professional, 2003) Chap. 1.

Chapter 4

KNOWLEDGE MANAGEMENT/BUSINESS PROCESS (BP) FRAMEWORK ENABLEMENT

The discussion in this paper has already established knowledge management as a process-centric discipline. However, the implementation and execution of knowledge strategy in organizations is often accomplished through one or more primary process methodologies or frameworks. The previous section reviewed some different process methodologies used as part of knowledge management strategy. This section will focus on the enabling technologies that surround knowledge centered business process frameworks, specifically focusing on the enabling technologies that comprise these frameworks.

The topical scope of KM enabling technology includes a number of different elements, including technology platforms (e.g. intranet, internet, databases, network strategies), applications (e.g. workflow, groupware, document management, data warehouse), and implementation strategies. There is a list of other elements that can be categorized under the enabling technology umbrella, but the primary focus of this discussion will include different enabling technology applications, and some perspective of enabling the KM/BP process frameworks.

4.1 Knowledge Management/Business Process Framework Enablement Overview

Any discussion regarding KM/BP process framework enablement needs to include some basis for the use of technology as underpin for the overall enabling strategy. Particular emphasis should be placed on understanding the role and scope of enabling technology in KM strategy, including perspective as an end strategy versus as simply a component of enablement.

Earlier discussion framed the KM definition from more functionally based perspectives. Another definition that provides a view of knowledge management through the technology lens affords a different perspective that helps better understand the context of enabling technology as part of the larger business strategy. "Knowledge Management, as it is practiced today, is a system of technologies focused upon the delivery of strategically useful knowledge and expertise, the availability of which facilitates effective collaboration and timely decision-making. The strategically literate employee, armed with the best and most up-to-date knowledge, delivered in a timely manner, will produce work that results in more satisfied customers, increased success and corporate value."[49]

The traditional KM view was translated as simply the transfer of knowledge from one person to another, the result of which enabled the recipient to benefit from the collective wisdom of the more experienced members of an organization or group. One example, knowledge transfer happens when the founder of the family business trains his sons and daughters to run

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[49] Robert Villegas Jr., *"Knowledge Management White Paper"*, KMPeer Publishing 2000, online posting, <http://km.ittoolbox.com/browse.asp?c=KMPeerPublishing&r=http%3A%2F%2Fwww%2Einsmkt%2Ecom%2Fkmwhite%2Ehtm>.

the business. Other examples; knowledge transfer also takes place when a young person goes to college to learn from a renowned professor, and when an apprentice welder trains under a master welder. However, as knowledge transfer has become more complex and dynamic, companies have learned there is much more to knowledge transfer than in the past. Competitive advantage has been gained through the use of technology and sound knowledge transfer principles to create dynamic collaborative environments that deliver knowledge strategically. This means the transfer of knowledge when and where it is needed, and to the people who need it.[50]

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[50] Robert Villegas Jr., *"Knowledge Management White Paper"*, KMPeer Publishing 2000, online posting, <http://km.ittoolbox.com/browse.asp?c=KMPeerPublishing&r=http%3A%2F%2Fwww%2Einsmkt%2Ecom%2Fkmwhite%2Ehtm>.

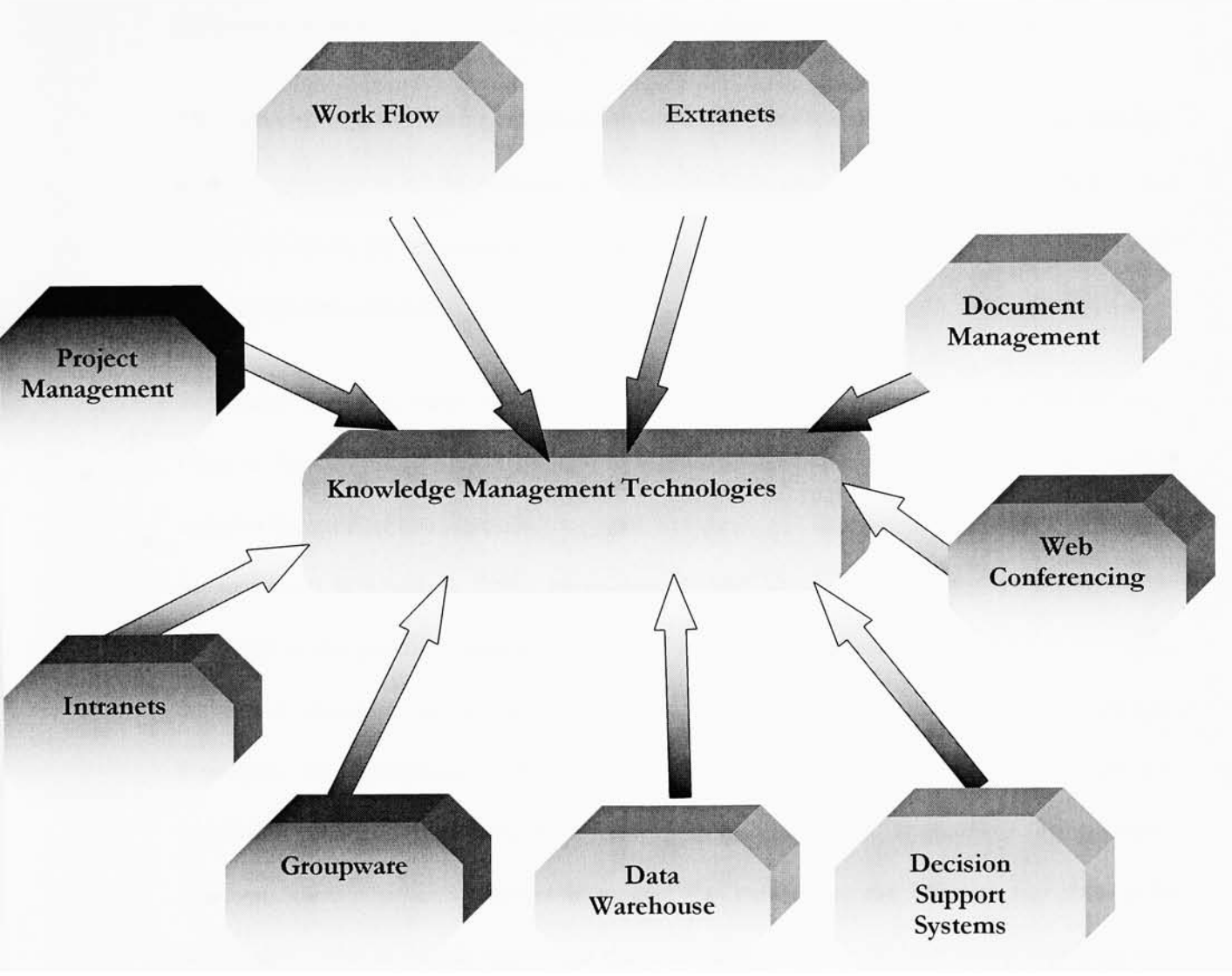
Work Flow
Extranets
Document Management
Project Management
Knowledge Management Technologies
Web Conferencing
Intranets
Groupware
Data Warehouse
Decision Support Systems

Figure 4.1-1

There are a number of enabling technologies (applications) commonly thought of when the term "knowledge management" is referenced. The diagram above in *Figure 4.1-1* depicts the different KM technology applications that support knowledge management systems.[51]

The different KM technology applications depicted in the figure above also overlap with the enabling applications of the business process framework enablement domain as a whole. This is true based on the assumption of knowledge management as a cornerstone of the overall business process strategy.

A practical means to frame the different KM/BP technology applications would be to frame them in the context of understanding the multiple conceptions of knowledge. This context includes the view of knowledge as an object, a process, and finally, as a capability. Knowledge as an object is largely a static, repository-oriented view contextualized as a pattern of information that produces insight. The KM/BP technology applications focused in this realm center on managing knowledge repositories, enabling the effective reuse of knowledge. Examples of applications include online frequently asked question (FAQ) databases, searchable knowledge bases, and the contents of interactive training applications. As described previous, knowledge as a process is a view that centers on the creation and sharing of knowledge. This is further supported that knowledge is dynamic, constantly changing, and always evolving. Some of the applications found in this view include information analysis tools such as data mining tools, search engines, and discussion board or chat (conferencing) technologies. Knowledge as a capability treats knowledge as a competence that is leverage to

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[51] Suresh Hemamalini, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management, Sept. 2002.

execute processes. Different applications that illustrate how this view of knowledge can be leveraged include just-in-time training, delivery of diagnostic and repair knowledge to technicians in the field, and remote management of end user computing environments.[52]

The different enabling technology applications that have been described, coupled with their context in the different views of knowledge, clearly illustrate the synergistic nature of knowledge management and associated enabling technologies. This synergy can be leveraged to provide a more flexible and adaptable business process framework, allowing more traditional process contexts (i.e. workflow) to be modified, or better adapting the knowledge basis itself.

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[52] Omar A. El Sawy and Robert A. Josefek, Jr., *"Business Process as Nexus of Knowledge"*, Handbook of Knowledge Management-Vol. 1, Chap. 22, p. 428.

4.3 A Perspective on Knowledge Management/ Business Process Framework Enabling Technology

Knowledge Management is an excellent example of the real basis for the discipline of Information Technology (IT). The boom in IT innovation has by no coincidence happened at the same time knowledge has become more recognized as the most valuable asset of the business organization. There is a powerful, synergistic relationship between KM and technology. A relationship that drives increased returns and increased sophistication on both fronts. As IT has become the individual's personal desktop tool, hence links to others, people have grown to covet even more access to information and other people's knowledge. This in turn, has driven demand for even better and more effective IT tools and technologies, one that becomes even more a part of the way people work.[53]

[53] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 10, p.85.

Chapter 5

THE PARADIGMS OF KNOWLEDGE MANAGEMENT AND BUSINESS PROCESS

Earlier discussion defined knowledge management as an oxymoron. This definition stated; knowledge is often viewed as more cognitive and personal, while management infers organizational and process contexts. The definition also offers insight into some of the paradigms that must be overcome by organizations to realize the full potential and value of knowledge management as part of their business strategy. This section will also offer some insight to help navigate towards achieving the goal of a cohesive knowledge management foundation tightly integrated into the overall business process strategy. The principle paradigm this discussion will follow is that organizations can only attain maturity in KM through a strong and cohesive coexistence of technology, processes, and people.[54]

[54] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management. Sept. 2002.

5.1 Creating an Environment for Knowledge Management

The crux of establishing an environment that will embrace and empower knowledge management as a core business strategy centers on establishing and maintaining relationships between core elements of the business, specifically the relationships between enabling technology, business process framework, and people.

Since many organizations looking to expand or focus on knowledge management as part of their overall business strategy are not new, and already have some level of established information infrastructure, means they already have a reservoir of knowledge. This knowledge is manifest in a wide variety of organizational processes, best practices, know-how, customer relationships, IT, corporate culture, etc. However, this knowledge is often diffused and disparate. Hence, they recognize the need and benefit for a more formal knowledge management approach, or what can be referred to as a knowledge foundation. Reviews of some proven principles reveal there are four key features to this foundation:

1) *A knowledge-based strategy*- to push ahead into new products, markets, and ways of doing business requires information and knowledge.

2) *A knowledge-sharing culture*- to maximize the impact of information collected and knowledge acquired, knowledge workers are being encouraged to share their best practices, new techniques, and lessons learned with their colleagues, wherever they are in the organization, whether locally or globally.

3) *A technical support infrastructure*- huge investments are being made in hardware and software to ensure the information and knowledge available within an organization is

available to the people who need it and in a form they can use. Given the potential enormity of potential costs involved, it is essential these changes be well managed.

4) *Business research and analysis-* there is increasing concern that despite the wealth of information available, it is often in a form that is not useful or even usable. Increasingly, organizations are turning to knowledge experts who can interpret the information for discernable value.[55]

These foundational elements serve to provide a basis to build on and move forward with a more comprehensive knowledge strategy. However, as an organization moves forward, there are new challenges and obstacles to overcome. Many of these challenges and obstacles are culturally based.

The full implementation of knowledge management has significant consequences for the structure and culture of the organization, and the individuals within the organization. As a business reviews their KM needs, a few questions should be asked as a basis to better understand the real objectives and their subsequent impact on the organization. Some of the questions asked should include:

- What is the central objective of knowledge management within an organization?
- What are the levels at which knowledge management must be considered, and how can it be executed at the different levels?
- What is the scope of knowledge management in relation to the types of knowledge that it should embrace?

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[55] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management. Sept. 2002.

- What are the technologies and techniques to be employed in knowledge management?[56]

There will be no simple answers to these questions because in a diverse and changing business environment, the nature of knowledge management is likely to be ever changing. Additionally, because of diverse business disciplines, the right answers may vary based business type, organizational purpose, and other, more global industry drivers. There is no doubt all organizations need to develop the capacity to be able to survive in a knowledge-based, global marketplace. An understanding of the potential business value offered by knowledge management, and the way in which knowledge management can be used effectively within their business, will become increasingly more critical for businesses and other knowledge dependent organizations.[57]

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[56] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management. Sept. 2002.

[57] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management. Sept. 2002.

The illustration in *Figure 5.1-1* below depicts the knowledge paradigms organizations face as they try to balance between the internal and external knowledge drivers.[58] The highly competitive environment found in a global economy keeps these internal and external drivers in a tenuous balance with other competitive pressures.

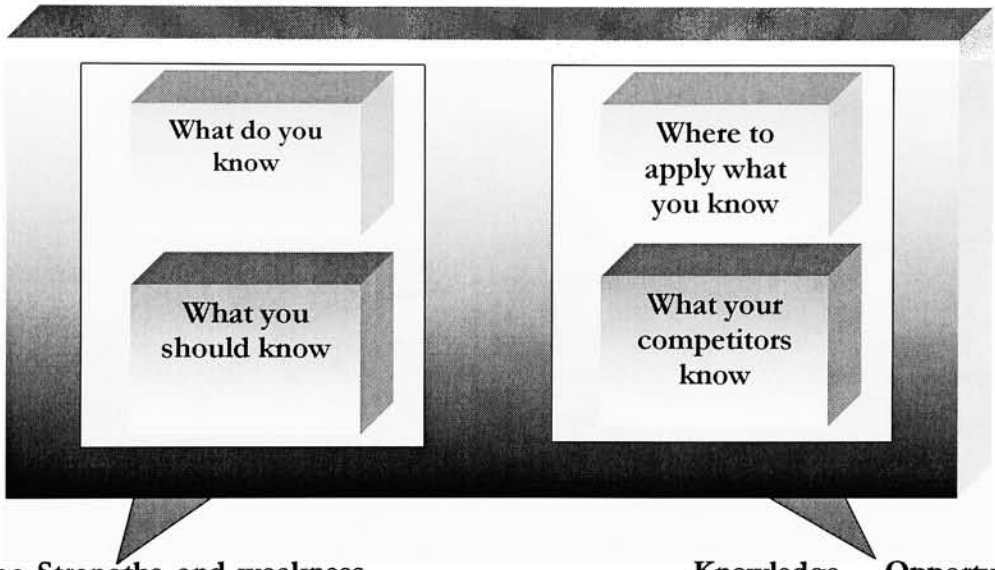

Figure 5.1-1

[58] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management. Sept. 2002.

The relationships depicted in *Figure 5.1-2* below provide a clear graphical synopsis of the essential elements of achieving a successful knowledge management strategy; people communicating knowledge through a well managed process framework, enabled through flexible, adaptive technology platforms and applications.[59]

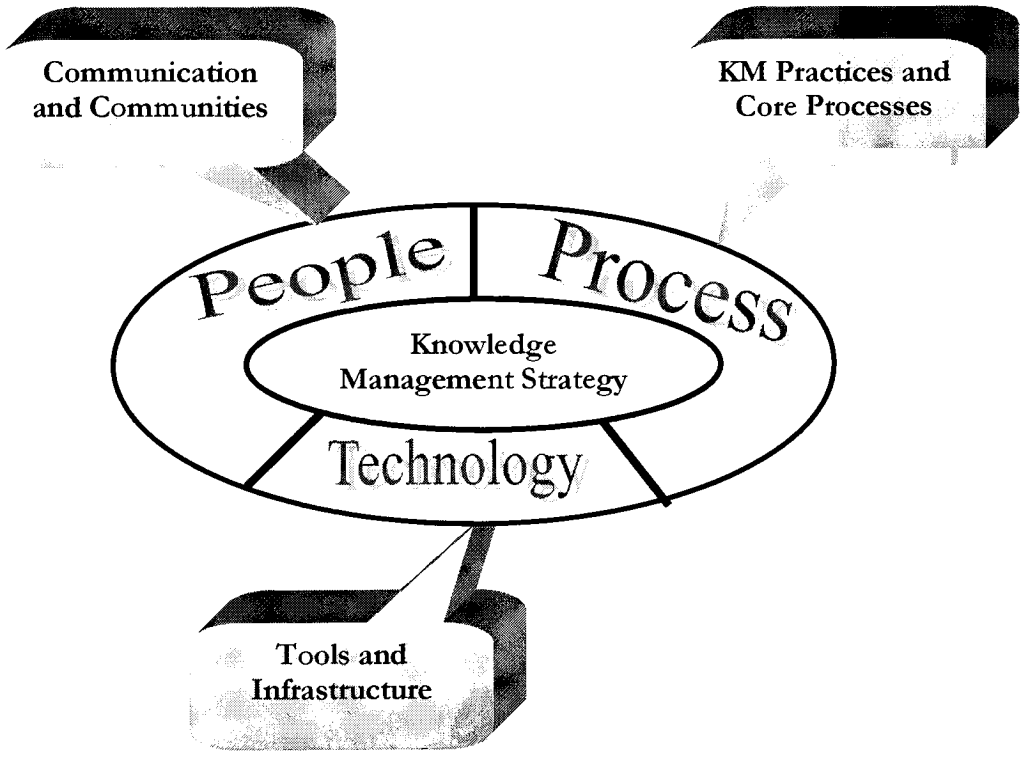

Figure 5.1-2

[59] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management. Sept. 2002.

5.2 Common Roadblocks for Knowledge Management Adoption

The last section laid out the foundational elements necessary to achieve a true knowledge driven organization. This section will provide some additional perspective on some of the roadblocks, perceived and actual, an organization could expect to encounter as it proceeds down the road towards establishing a knowledge management strategy and framework.

There have been many roadblocks to adoption of formal knowledge management activities. Managing knowledge has been perceived as an unmanageable kind of problem, an implicitly human, individual activity, undisciplined within traditional management methods and technology.[60]

Businesses have tended to treat the activities of knowledge work as necessary, though ill-defined, costs of human resources, and treat the explicit outputs of knowledge work as a form of publishing, or a byproduct of "real work." The result has been the metrics associated with knowledge resources, and the ability to manage those resources in meaningful ways, have not become part of business infrastructure.[61]

However, the trend is moving towards knowledge enablement. More is known about how people learn, and how organizations develop and use knowledge. The amount of information about managing intellectual capital is growing. Through continued evolution of the KM discipline, there are new insights and solutions from a variety of domains and disciplines that can be applied to making knowledge work manageable and measurable. Lastly, enabling

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60 Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

61 Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

technology, itself a cause of the problem can provide new tools and applications to make it all work.[62]

Another paradigm to consider, organizations must accept that the nature of business itself has changed, in at least two important ways:

1) Knowledge work is fundamentally different in character from physical labor.
2) The knowledge worker is almost completely immersed in a computing environment. This new reality dramatically alters the methods by which we must manage, learn, represent knowledge, interact, solve problems, and act.[63]

A business cannot gain competitive advantage simply by throwing more information and people to solve the problems. Conversely, you cannot solve knowledge-based problems with approaches borrowed from the product-oriented, print-based economy. Those solutions are viewed as reactive and inappropriate.

The application of technology blindly to knowledge-related business problems is also a mistake, but the technology enabled business environment provides opportunities and new methods for representing "knowledge" and leveraging its business value. The not so simple is that in many cases, businesses have not defined in a rigorous, clear, widely accepted way the fundamental characteristics of "knowledge" in the computing environment.[64] The information and discussion presented throughout this paper goes a long way to refute some of these points. However, the reality remains, many businesses continue to struggle with some of these

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62 Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

63 Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

root cause issues, and remain mired in the inability to define and execute a cohesive knowledge management strategy.

[64] Rebecca O. Barclay and Phillip C. Murray, "What is Knowledge Management?", Knowledge Praxis, 1997.

5.3 A Matter of Security

As businesses are faced with the dynamics of today's business models, including continual technology evolution and new business process models, they are facing ever-growing security concerns across their enterprise. These concerns center around the business' ability to keep these change dynamics aligned with their overall business objectives and related strategies. Information Technology governance becomes an integral part of the business strategy chartered to oversee the respective disciplines to ensure the technology and process domains remain in alignment with the business side of the organization in accordance with the overall business objectives. The primary means to administer this governance is through a risk management strategy.[65]

Risk management is a broad, encompassing process that identifies risks, security and controls for the KM infrastructure and systems. The risk management strategy should encompass the ongoing assessment, audit, and control functions relative to the key KM initiative elements. These functions, as a minimum, would include:

- Project management- establishing KM project guidelines
- Strategy (alignment)- alignment of KM with the business objectives
- Process- analyzing the risks associated with creating, acquiring, and sharing knowledge

[65] Roger Jamieson and Meliha Handzic, "A Framework for Security, Control and Assurance of Knowledge Management Systems", Handbook of Knowledge Management- Vol. 1, (Berline: Springer, 2003), Chap. 25, p.478.

- Foundations- identify risks within the enabling technology, the culture, and sustaining knowledge systems of the organization[66]

The need for a sound risk management strategy will continue to grow and will be critical to sustainment of the KM initiative as part of a broader, more comprehensive business process strategy. Failure to do so can result in devastating consequences and compromise to the business in measure of business value and competitive advantage. Additionally, increased regulatory burden and other unforeseen variables (internal and external) underscore the need and resolve for a contiguous risk management strategy.

[66] Roger Jamieson and Meliha Handzic, "A Framework for Security, Control and Assurance of Knowledge Management Systems", Handbook of Knowledge Management- Vol. 1, (Berline: Springer, 2003), Chap. 25, p.479.

Chapter 6

CASE STUDY ANALYSIS

This section will provide separate case study reviews of three different business organizations that historically have enjoyed a sound reputation for having a strong knowledge-centric bias integral as part of their overall business strategy; IBM, Hughes Space and Communications, and Northrop Grumman. These reviews will illustrate how different business issues drove a need to review and revamp their existing knowledge disciplines and/or initiatives, then discuss how these organizations realized and redirected their knowledge based initiatives, and finally the results they achieved.

Before reviewing the case studies of these companies, it should be acknowledged there are hundreds, if not thousands, examples of organizations that have achieved significant benefits through implementation of knowledge management strategy in their overall business process framework. Here are a few examples from just a few of the many companies that have achieved levels of KM success:

- BP - by introducing virtual team-working using videoconferencing have speeded up the solution of critical operation problems
- Hoffman La Roche - through its Right First Time program has reduced the cost and time to achieve regulatory approvals for new drugs.

- Dow Chemical - by focusing on the active management of its patent portfolio have generated over $125 million in revenues from licensing and other ways of exploiting their intangible assets.

- Texas Instruments - by sharing best practice between its semiconductor fabrication plants saved the equivalent of investing in a new plant.

- Skandia Assurance - by developing new measures of intellectual capital and incentive based their managers on increasing its value have grown revenues much faster than their industry average.

- Hewlett-Packard - by sharing expertise already in the company, but not known to their development teams, now bring new products to market much faster than before.[67]

[67] David J. Skyrme, *Knowledge Management: Making Sense of an Oxymoron*, Insight,, David Skyrme Associates, 1997-2003.

6.1 IBM Case Study

Holding the largest number of patents in the world, IBM is perhaps the preeminent intellectual capital enterprise. However, contrary to what other knowledge practitioners may believe, IBM didn't begin to manage knowledge in an organized, methodical fashion until the early 1990s, when it began a major overhaul of its overall business operations.[68]

IBM came to a not so surprising revelation that knowledge is core to their business model. When they realized they need to manage its intellectual (capital) assets, it was also realized they had already been doing it for many years, simply in a less explicit and organized manner.

The impetus for their current knowledge strategy began back in the 1980s when they implemented tools for conferencing and structured discussion. An Intellectual Capital Management (ICM) was formed in attempt to institutionalize knowledge management and make it a formal discipline.[69]

IBM utilized a multi-faceted approach to launch their KM initiative, including a massive Lotus notes deployment and an ICM intranet, one of the first intranets implemented by a major corporation. Lotus Notes is a windows-based collaborative application designed to facilitate group work by making e-mail, schedule sharing, database access, and document collaboration effortless. The IBM KM system is organized along competencies: logical groupings of people and resources that relate to a particular business area. These competencies cut across IBM's organizational silos. Some of the silos are processes, such as supply chain management.

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[68] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 7, p.55.

[69] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 7, p.55.

Others are more topical, including network design architecture. Their ICM has set a process in place to identify a competency, key people involved, and set up a structured discussion area. IBM had approximately 6,000 employees accessing the various competency discussion groups. By 1988 the company had over eighty different competencies up and running.[70]

IBM has learned a few lessons during the course of their KM initiative deployment. First, there has to be a value shown for the (KM) efforts. The key is simple, show a business value based on what's been invested to implement the strategy. Second, you need to have a process and management framework in place to manage the initiative. The core of the KM initiative, this framework is the infrastructure that assigns and assesses metrics, and more importantly, provides the basis to motivate the employees by communicating the KM vision and establishing the value system that culturally enables the framework. A third, but by no means final lesson, is to carefully monitor the actual deployment of the different KM initiatives. An enterprise-wide initiative for any system or strategy execution presents a number of challenges organizationally. Issues based on global difference, and issue driven locally by technology differences, all must be carefully monitored to ensure successful execution of the initiatives.[71] The success of specific KM initiatives across different competencies yields a synergistic effect that casts knowledge as a cornerstone of IBM's overall business strategy.

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[70] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 7, p.56.

[71] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 7, p.56.

6.2 Hughes Space & Communication Case Study

Hughes Space & Communication, a major aerospace and defense contractor, has over 5,000 employees and generates over $1.2 billion a year in sales of communications and satellites technology to private and public sector customers.[72]

In past years, Hughes was able to produce its products in a near custom environment. As the commercial market exploded and the government market shrank, driven by commercialization efforts, Hughes found it needed to cut costs and create a more structured, more efficient approach. Technical excellence was considered their core competency in communication satellites.[73] Significant price pressures driven by competition and customer expectations have placed incredible focus on cost containment and schedule discipline. Hughes has had to adjust its business model to eliminate unnecessary costs, but maintain its ability to design and manufacture innovative new products.

The production of spacecraft is 50 percent labor cost, and 50 percent is design cost. Hughes realized they could have a significant impact on their cost structure if they could promote design reuse instead of starting form scratch on each new development. They calculated a potential cost reduction of $7 to $25 million per spacecraft if it were able to reuse designs, based on the assumption labor costs would be 90 percent less for adapting an existing design than creating new ones.[74]

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[72] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 7, p.51.

[73] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 7, p.51.

[74] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 7, p.52.

Hughes' primary knowledge basis exists in the form of product designs and other technical documents. Accordingly, they have adopted and now use a plethora of knowledge-sharing systems to maximize design reuse. These collections of knowledge systems, referred to as Hughes "Knowledge Highway", combines an intranet, a database of lessons learned and best practices, and pointers to experts and "human" networks. Editorial teams analyze captured "knowledge" and best practices before storing them on the shared-access databases and intranets.[75]

This case study illustrates the importance and significance of KM initiatives in the context of the overall business strategy. Hughes core competency of technical excellence in communication satellites is rooted in the knowledge domains that have evolved over time as part of their product development initiatives. Competitive pressures have forced them to find more innovative solutions to leverage their knowledge competencies, specifically through design reuse. Design reuse requires a very process-centric bias to succeed effectively and repeatedly. Accordingly, there is a great emphasis on capturing the human inputs and outputs of design to achieve a strong knowledge foundation. The multiple origins and repositories of this knowledge drive a requirement for robust enabling framework and process discipline to yield an effective KM strategy.

Through a sound strategy of knowledge capture and transfer, Hughes has been able to demonstrate a substantial business value for their KM efforts. The continued pressure to find

[75] Carla O'Dell and C. Jackson Grayson, Jr., If We Only Knew What We Know, 1998, Chapter 7, p.52.

more innovative ways to leverage their core competencies underscores the critical importance of KM strategy in direct relation to the overall business strategy.

6.3 Northrop Grumman Case Study

In the mid-late 1990's, Northrop Grumman Air Combat Systems (ACS) had to face what many large defense contractors faced during this time, the consolidation and downsizing caused by the reduction in defense spending linked to the end of the Cold War. This was evidenced in reduced business levels and the subsequent layoffs of large amounts of employees. Because of their product complexity and advanced technology competencies, they feared a great risk in losing a significant amount of intellectual capital through the layoffs.

As lead contractor for the B-2 Stealth bomber, ACS was in danger of losing the expertise it needed to support and maintain a complex machine that would be flying for years to come. ACS instituted knowledge management procedures designed to capture so-called tacit knowledge or their know-how and experience with the B-2.[76] The company realized a large percentage of this knowledge resided in their employee's minds.

Given the large number of layoffs that had gripped the organization, and with it the further loss of knowledge, ACS Project Manager Scott Shaffar wanted to institute KM initiatives throughout ACS. He used a survey to determine their knowledge needs, sharing practices, and any "knowledge prejudices." Shaffar wanted to find out what barriers, if any, prevented employees from sharing knowledge with their peers. He surmised that if he could provide tangible justification based on the results of the survey, he would have a road map for designing a KM program and getting the funding for the technologies needed to facilitate and implement it. The results confirmed that employees were eager to share their knowledge in an

automated system, but that challenges, such as integrating the systems across different business lines, remained.[77]

Through Sharrar's efforts, knowledge management gained a real foothold in the wind-down of ACS's B-2 bomber program. ACS established a 10-person KM team to identify subject matter experts and capture the content of their brain cells. After creating about 100 knowledge cells and identifying 200 subject matter experts within those cells, their KM council turned its attention to knowledge capture. The team created websites for each of the knowledge cells and logged information about the knowledge experts into an expert locator system called Xref, short for cross-reference. Using Xref, ACS employees can search for information in any number of ways, including by employee name, program affiliation or skill. One example, if the B-2's landing gear is locking up, someone can find the landing gear expert through Xref.

As layoffs continued, ACS established a four-person KM team charged with developing a unit-wide strategy. ACS wanted to be sure that the expertise collected in centralized systems would not only be useful, but that it would be used. They realized there would be challenges sharing knowledge across programs, especially those with different customers and in different locations. One important result noted in the survey showed that employees recognized the value of their fellow employees' know-how and their willingness to share information. Underscoring the importance and relevance of tacit knowledge, the survey showed a majority (51 percent) of employees said the brains of ACS employees were the primary source for best

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[76] Megan Santosus, *"Thanks for the Memories"*, CIO Magazine, September 1, 2001.

[77] Megan Santosus, *"Thanks for the Memories"*, CIO Magazine, September 1, 2001.

practices and lessons learned.[78] This was in contrast to explicit based sources (e-files, databases, etc.). This revealed a culture that would be receptive to a formal knowledge management push. However, the results also showed that challenges remained accessing information across their knowledge enterprise domain.

The ACS KM team devised a three-pronged strategy focusing on people, processes, and technology.[79] On the people side, the KM team set out to identify and then retain experts throughout ACS, establish communities of employees who had similar responsibilities and facilitate sharing among employees. The primary purpose of these communities is to enable knowledge sharing across boundaries. Relative to processes, the KM team focused on determining how people captured, organized, and reused existing knowledge. Initially, they found employees maintained most of their knowledge in their own files. However, there was no central repository where lessons learned could be easily shared or accessed by employees who were not personally involved in a project. As a result of that finding, the team implemented technologies designed to collect and disseminate lessons learned using web-based portal and workflow systems.

Additionally, when it came to technology, the audit helped the KM team recognize the need to better integrate the various KM systems at ACS. The technology pieces of the strategy, tools such as their homegrown Xref system, collaboration applications, and document management systems, essentially serve as the glue keeping the ACS KM initiative together. The technology initiatives that focus on five areas; portals, expert locator, knowledge capture, media

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[78] Megan Santosus, *"Thanks for the Memories"*, CIO Magazine, September 1, 2001.

management and collaboration, are a result of the traditional barriers to sharing information, such as paper-based filing systems, disparate locations and an inability to locate internal expertise. Currently, ACS has implemented their Xref system throughout the engineering unit as well as in systems for managing documents, collaborating and capturing knowledge. Other initiatives, including portals that push personalized information, continue to evolve.

As the ACS KM initiative matures, they hope to transition their emphasis from primarily a means to retain and transfer knowledge, to better focus on their ability to stimulate innovation and improve customer support efficiency.[80] This change in focus represents the recognition of the significance and importance an integral KM strategy can have as a measure of business value. This case study also pretty clearly reveals that the crux of the ACS KM initiative was to provide an integral means to manage and subsequently leverage their vast knowledge repositories. An analysis of their implementation reveals a keen focus on process and enabling technology framework as core foundational components of their KM strategy. The tangible yields as evidence in improved business value, demonstrate the role and significance these essential components provide in the overall business strategy.

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79 Megan Santosus, *"Thanks for the Memories"*, CIO Magazine, September 1, 2001.

80 Megan Santosus, *"Thanks for the Memories"*, CIO Magazine, September 1, 2001.

6.4 Case Study Analysis/Summary

An analysis of the case studies presented in this section shows a consistent pattern depicting the critical importance and benefit of a sound knowledge management strategy. As demonstrated in the case studies examined, this strategy is centered on the organization's ability to manage its' intellectual property and knowledge repositories within a robust and clearly defined process framework. The discussions reveal the process framework is enabled through a dynamic technology platform that provides the means to clearly identify and discern the true knowledge assets of the organization.

A primary incentive for each of the businesses discussed was to develop and implement formal KM strategies and initiatives driven in large part as response to increased competitive pressures. These companies, all leaders in their respective technology driven markets, realized their real business value wasn't core in the technology itself, but the knowledge basis and intellectual property that enabled them to produce the variety of products and services their customers wanted and demanded. Their ability to execute a successful business strategy was a direct result of their ability to generate and manage the knowledge systems that drive product innovation and development.

Technological convergence has become a constant in many business domains, including those described in these case studies. However, as the technological convergence continues, intellectual property continues to amass exponentially. An instance of "old" or existing knowledge often derives multiple instances of "new" knowledge. The transition from a custom, program specific communications satellite development initiative to a much broader

commercial satellite product portfolio, presented Hughes a two-fold issue. First, they needed to develop a discipline and framework that would allow them to discern their core knowledge base to leverage for design reuse in commercial markets. Second, they needed to develop and implement a KM strategy that would allow them parse and share the knowledge to the respective development organizations that would leverage this knowledge base to spur new product innovation and development. This directly supported their change in business strategy to mitigate the impact to their traditional markets from competitive pressures. Their ability to leverage their core intellectual property base into new commercial markets and subsequent business growth, clearly illustrates the critical role of KM in the overall business strategy.

When IBM realized they needed to develop a formal KM strategy, it was part of a broader overhaul of their business operations, but recognized as a critical component for ensuring their long-term viability. As a pioneer in the computing field, they long took for granted their intellectual property as a core business asset. However, through maturation in their marketplace, as evidenced in the increased number of competitors, and the increased pace of technological convergence/evolution in the computing industry, IBM had sufficient incentive to become more proactive in the preservation of the leadership status in the industry. The unique aspect of the formal KM strategy employed by IBM was not just that it was an integral part of their overall revised business strategy, it really became the essence of the strategy. They have effectively integrated a KM component within every facet of their business operation.

The competitive pressures that have driven KM initiatives at Northrop Grumman ACS are portrayed in a slightly different contrast with the competitive pressure drivers at Hughes, but the impetus from both is very much the same. As major defense contractors, they both faced a multitude of issues related to significant reductions in defense spending during the 1990's. Hughes faced the challenge how to leverage their intellectual capital to transition to a more sustainable business model in commercial markets when the traditional, less competitive defense business began to sag. The issue facing Northrop Grumman ACS was not any less critical than the issues faced by Hughes, but could certainly be assessed as more acute. Their issue dealt with the threat of losing their intellectual capital. ACS realized if they loss even a small amount of their core intellectual capital through layoffs or other human attrition, their ability to remain a viable business entity would be permanently compromised. The technical complexity of the products and systems they developed yielded a vast of amount of intellectual capital to be captured and managed. ACS realized they would need a pretty comprehensive KM initiative to manage their vast knowledge inventory before it was too late. Because of the critical threat of knowledge loss, their KM strategy became a lifeline for their overall business strategy.

A common theme across all these case studies shows the capture and sharing of intellectual capital across the business enterprise, remains integral to the success of the overall business strategy. The knowledge assets of most business organizations are dynamic and growing. As the global economic climate continues to grow and change, the boundaries of business change too. This means more disparate knowledge bases that will need to be brought together within a robust and disciplined knowledge framework (human knowledge + effective process +

enabling technology) that businesses can leverage for economic sustainment and yield improved competitive advantage.

Chapter 7

CONCLUSION/FURTHER ANALYSIS

This paper has presented many different perspectives on Knowledge Management as a business discipline, and also presented KM in different contexts to illustrate its role and effectiveness as part of the implementation within the business process framework, and execution as part of the overall business strategy. It would be appropriate to summarize this discussion by taking a forward-looking view of where KM is headed as a discipline and as a component of business strategy.

7.1 The Future of Knowledge Management

As KM shifts the emphasis from the singleness of information to the formal and informal processes used to better relate and share information, new KM practices are more focused toward changing an organization's climate to better acclimate this emphasis. This becomes more important as companies seek to find ways to identify the types of knowledge they accumulate and what they need to prosper and grow this knowledge base.

One outcome from this new emphasis is the disclosure of the real importance of the knowledge management function. Another involves the evolution of one particular enabling technology, enterprise portals, which bring knowledge straight to the desktop. This has revolutionized effective business decision-making. Organizations must understand this shift to maintain an effective Knowledge Management discipline towards the goal of achieving increased value as a measure against the overall business objectives.[81]

There are other progress areas that define the evolution of knowledge management over the last few years, some certainly more significant in scope and impact than others. This progress includes:

- attracted significant interest from many areas, including top companies and government agencies
- prompted the release of several magazines devoted exclusively to knowledge management
- become an initiative for between a third and half of Fortune 500 companies

[81] http://acquire-data.com/White_Papers/knowledge_management.htm

- delivered, demonstrable benefits in a variety of situations (case studies)
- created market opportunities for suppliers, especially for software products and management consultancy
- stimulated new ventures devoted to exchange and sale of knowledge.[82]

While some of these progress points may seem inconsequential, they help illustrate the degree of focus and attention businesses place on this discipline. Many continue to realize the criticality of a comprehensive knowledge strategy for their business, and the need to find more ways to leverage this knowledge for competitive advantage and overall efficiency.

[82] David J. Skyrme, *Knowledge Management: Making Sense of an Oxymoron*, Insight., David Skyrme Associates, 2003.

7.2 Paradigm Shifts and Challenges

A number of issues and challenges remain to realize the full value and benefit of KM as a business strategy. Some of these paradigm shifts and challenges have already been discussed. One important paradigm shift reported by a sampling of knowledge practitioners is that of changing the culture from "knowledge is power" to "knowledge sharing is power."[83] The case studies presented support this assertion. Some of the obstacles related to this shift include; finding time amongst other key business initiatives; introversion, the fear of outsourcing traditional knowledge domains; and, overly focused on managing knowledge than creating it; and, the parochialism of knowledge ownership versus the realization of true cross-enterprise collaboration.

None of these challenges are insurmountable. Implementing a successful knowledge management requires a systematic change and a supported project management approach. However, it is more than just a project. Over time, a consistent knowledge management system and framework changes the way that people work so their individual knowledge is more effectively harnessed for the benefit of all.[84]

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[83] David J. Skyrme, *Knowledge Management: Making Sense of an Oxymoron*, Insight., David Skyrme Associates, 2003.

[84] David J. Skyrme, *Knowledge Management: Making Sense of an Oxymoron*, Insight., David Skyrme Associates, 2003.

7.3 A Final Perspective

The essence of Knowledge Management involves connecting people with people, through better connecting people with information. The formal manifest of this relationship is knowledge transfer. The creation and sustainment of competitive advantage today requires the ability to develop and leverage organizational knowledge. Leading edge businesses consider their knowledge base to be their most important strategic asset, actively and explicitly managing it as such because of the business value it yields.[85] Knowledge management also manifests as a management philosophy, which combines good practice in purposeful information technology strategy with a culture of organizational learning. The goal is simple, to improve business performance. The KM framework and strategy calls upon the organization to lead their teams to craft, communicate, and instill KM practices throughout the organization. This is the cultural dimension in KM strategy. Knowledge for its own sake does not help the organization unless it can turn it into action. The yield of added value, improved competitive edge, creation of new product or market opportunities, and to improve overall business performance, the people comprise of the organization have to make a real change in the way they see and do things. This means going beyond analyzing, reporting, benchmarking and sharing. They have to transform information and knowledge into action.[86] This is the realization of Knowledge Management strategy as a core business strategy.

And finally, as organizations strain to find new ways to refine standard business processes for increased competitive advantage, there is an increased realization the only sustentative means

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[85] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management. Sept. 2002.

to greater productivity, efficiency, and innovation is through a more effective knowledge management discipline. Enterprise focused knowledge management initiatives must harness people, process, and enabling technology to create, capture, and share knowledge as an integral part of the overall business process. The convergence of these three sometimes disparate business elements provide obstacles and barriers for organizations to overcome, but the synergy that can result will almost certainly ensure success when made integral to the organization's core business strategy.

[86] Hemamalini Suresh, "Knowledge Management- The Road Ahead For Success", PSG Institute of Management. Sept. 2002.

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