

Knowledge Management Consulting Method

Part 2 – KM Frameworks

Module 2.1 – Critical Review of Frameworks

Table of Contents

1.0	REVIEW OF FRAMEWORKS AND APPROACHES.....	3
1.1	INTRODUCTION.....	3
2.0	ANALYSIS OF EXISTING FRAMEWORKS.....	5
2.1	INTRODUCTION.....	5
2.2	FRAMEWORKS THAT FOCUS ON KNOWLEDGE CREATION.....	6
2.2.1	<i>The Framework of Nonaka and Takeuchi</i>	6
2.2.2	<i>The Framework proposed by D. Leonard-Barton</i>	8
2.3	FRAMEWORKS THAT FOCUS ON KNOWLEDGE PROCESSES.....	11
2.3.1	<i>The APQC Framework</i>	11
2.3.2	<i>The Framework of Romhardt and Probst</i>	12
2.4	FRAMEWORKS THAT FOCUS ON TECHNOLOGY.....	14
2.4.1	<i>The Framework of Lotus</i>	14
2.4.2	<i>The Framework of Angus and Patel</i>	16
2.5	HOLISTIC FRAMEWORKS.....	18
2.5.1	<i>The ICM Framework of IBM</i>	18
2.5.2	<i>The Framework of Coopers & Lybrand (pre-merger)</i>	19
2.6	THE HOLISTIC KNOWLEDGE ASSET FRAMEWORK.....	21
3.0	DIRECTIONS OF KNOWLEDGE MANAGEMENT PROJECTS.....	24
4.0	LIMITATIONS OF EXISTING FRAMEWORKS.....	26

1.0 Review of Frameworks and Approaches

1.1 Introduction

Since the aim is to develop and implement holistic frameworks and the associated education method and tools for leveraging knowledge in organisations, the first issue is to define the factors that should be treated in such an effort, i.e. to establish a conceptual framework that will facilitate managers undertaking a knowledge management initiative.

The Holistic Knowledge Asset Framework, wherever possible, incorporate, extend and provide an amalgam of what's already available either from academic, theoretical approaches as well as from applied practitioner-like work in knowledge management efforts.

With this aim, this module provides an overview of knowledge management from two perspectives:

1. On one hand, the key theoretical and conceptual frameworks that have been developed to assist and/or describe knowledge management initiatives; and
2. On the other hand, the issues that arise from the actual knowledge management initiatives that companies world-wide have undertaken; their objectives and the direction they have followed to accomplish them.

We conclude with discussing how existing approaches relate with the Holistic Knowledge Asset Framework aims and the direction it is taking to address the knowledge management needs of knowledge-intensive organisations.

It is well accepted that knowledge management had its roots in other areas, it is a folly to pretend that it's new. Sveiby (1997) has grouped the origins of knowledge management as a theory according to the two views (or perspectives) of knowledge:

1. knowledge as an object and
2. knowledge as a process.

He also distinguishes between the individual and the organisational level.

	Knowledge = Object	Knowledge = Process
Organisation	<ul style="list-style-type: none"> • Systems Theory • Computer Science • Business Process Reengineering 	<ul style="list-style-type: none"> • Organisation Theory • Sociology
Individual	<ul style="list-style-type: none"> • Artificial Intelligence 	<ul style="list-style-type: none"> • Psychology • Philosophy • Pedagogy

Table 1.1: KM: The Theory Origins [Sveiby (1997)]

A similar categorisation of knowledge management approaches at the organisational level has been made by Spek and Spijkevert (1997) and Davenport (1996): One that sees knowledge as an object and uses systems theory and IT to leverage it and one that sees it as a process and targets the more soft, human issues to fuel its generation and growth.

Each has its own emphasis on problems and possible solutions.

On one hand there is a system-oriented approach which aims to provide a better insight into the supply and demand of knowledge and the quality of the organisation as a 'knowledge system'. It does this by analysing and documenting processes, actors, knowledge carriers, knowledge fields and the dynamics of the work field. On the basis of such an analysis bottlenecks and effects are identified. The characteristic feature of this approach is that knowledge is considered as a production factor, which can be analysed in isolation from the current carriers of the knowledge. Several options are then available for making improvements. This approach resembles theories like Business Process Re-engineering and Quality Management, as well as the 'soft systems' approach which forms the basis for the theories about learning organisations.

Secondly, there is the approach, which focuses on the improvement of professional organisations based on people's behavioural criteria and their cultural context. The independent professional is the central figure here. Actions taken to make improvements are not so much based on the analysis of knowledge as on an abstract concept. The emphasis is much more on facilitating professionals so that they can apply their knowledge to the advantage of the organisation. Furthermore, they are expected to repeatedly update their knowledge so that their organisation will still be able to benefit from it in the future. From this perspective, knowledge is considered as inseparable from human-beings.

An extreme position within this approach maintains that making knowledge carriers and knowledge areas explicit in relation to business processes will lead to rigidity, and that this is mainly a way for the management to keep a better grip on their employees. Within this approach too there are several possible directions in which solutions can be found.

The two extremes of the continuum of methods and approaches are summarised in Table 2.2.

	<i>Human & behavioural approaches</i>	<i>Systems-based approaches</i>
Strategy	hire people and leave them alone	get people to do work differently
Focus	input/outcomes	activities
Detail	macro	micro
Evaluation	multi-yearly	hour/daily
Level	individual	large group
Participation	broad	narrow
Commitment	persuasion	mandate
Analytic Emphasis	understanding existing environment	design new environment
Work Done By	insiders	outsider
Primary Barrier	loyalty to discipline	fear of change

Table 2.2. Two approaches to Knowledge Management (Spek and Spijkevert, 1997)

2.0 Analysis of Existing frameworks

2.1 Introduction

Frameworks are very frequently encountered in the knowledge management area. Usually they are used as a visual or conceptual tool to set, in draft lines, the context of the specific approach. The great diversity of knowledge management approaches are reflected to the frameworks.

There exist frameworks that try to be ‘holistic’ and general in an effort to stress the interdisciplinary nature of knowledge management, while others focus in a key area and are more detailed.

In the next paragraphs we present some characteristic frameworks grouping them with respect to their focus area.

Focus Area	Framework
Knowledge creation	<ul style="list-style-type: none"> • Nonaka/Takeuchi • Leonard-Burton
Knowledge processes	<ul style="list-style-type: none"> • APQC • Romhard and Probst's
Technology	<ul style="list-style-type: none"> • Lotus • Agnus and Patel
Holistic	<ul style="list-style-type: none"> • IBM • Coopers and Lybrand • Knowledge 2.0

Table 2.3: Frameworks examined

2.2 Frameworks that Focus on Knowledge Creation

The first group comprises frameworks that put emphasis on the generation of new knowledge within organisations. Two well-known examples from this group are the Nonaka and Takeuchi framework as well as the one proposed by Leonard-Barton.

2.2.1 The Framework of Nonaka and Takeuchi

Nonaka and Takeuchi (1995) are distinguishing two types of knowledge: explicit and tacit.

Explicit Knowledge:

Explicit knowledge is formal and systematic and thus, easy to communicate and share; it is knowledge that is transmittable in a formal language and can be stored in databases, libraries, etc.

Tacit Knowledge:

Tacit knowledge is personal knowledge that is hard to transmit; it consists of mental models, beliefs and perspectives that can not be easily articulated and shared. It is the movement between these two forms of knowledge that forms the process of creating new knowledge.

According to [Nonaka, 91] there are four basic patterns of creating knowledge:

1. From Tacit to Tacit (Socialisation) – when individuals share knowledge directly through observation or imitation without coding it on an external carrier.
2. From Explicit to Explicit (Combination) – already available coded, discrete pieces of knowledge can be combined by individuals to new explicit knowledge.
3. From Tacit to Explicit (Externalisation) – individual knowledge can be externalised, i.e. coded on an in-dependent carrier to explicit knowledge.

4. From Explicit to Tacit (Internalisation) – explicit knowledge can be internalised by individuals to new tacit knowledge. Individuals use explicit knowledge to broaden, extend and reframe their own tacit knowledge.

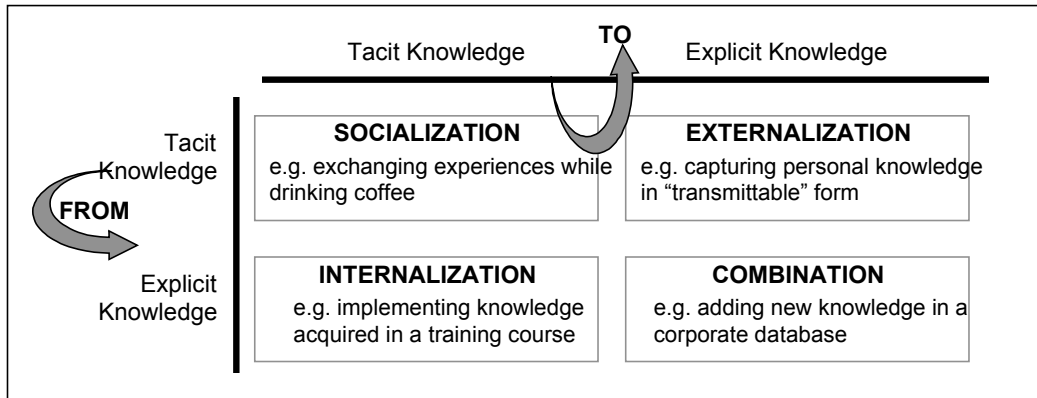


Figure 2.1 Nonaka/Takeuchi's framework (Nonaka and Takeuchi, 1995)

The basic characteristics of the four modes of knowledge conversion are as follows; see also Figure 2.1.

- Knowledge socialisation generates new tacit knowledge by sharing and exchanging know-how and past experiences.
- Knowledge internalisation maps explicit knowledge into internal knowledge.
- Internalisation happens when individuals, exposed to other's people knowledge, make it their own.
- People internalise knowledge by doing, but also by looking at what other people have done in a similar context and by example.
- Knowledge externalisation involves structuring knowledge and make it available to other users, while knowledge combination generates new knowledge by combining pre-existing explicit knowledge and bringing it together to produce new insight.

With reference to Nonaka (Nonaka, 1991) the process of knowledge creation in organisations is a set of interwoven processes, which can be summarised as follows:

Organisational knowledge is created through a continuous dialogue between tacit and explicit knowledge. The starting point is always tacit knowledge, which is created by employees and externalised on an external carrier as paper or computers. Thereby moving from the tacit to explicit knowledge is the articulation of one's vision of the world. Thus explicit knowledge represents a specific view on a given world, which was created within a given context. While new knowledge is developed by individuals, organisations play a critical role in articulating and amplifying that knowledge. In its explicit form knowledge can be further combined with other explicit knowledge to new

knowledge. At the end of the process is the internalisation of explicit knowledge to new tacit knowledge; see also Figure 2.2.

From the process point of view, the knowledge creation spiral is a set of interwoven processes of knowledge creation, externalisation, usage, combination and internalisation, which are defined around a given kernel of explicit knowledge. The processes are performed by human or software agents parallel and in different combinations. After a critical mass of new or redefined knowledge is created they result in a new basic kernel of organisational knowledge.

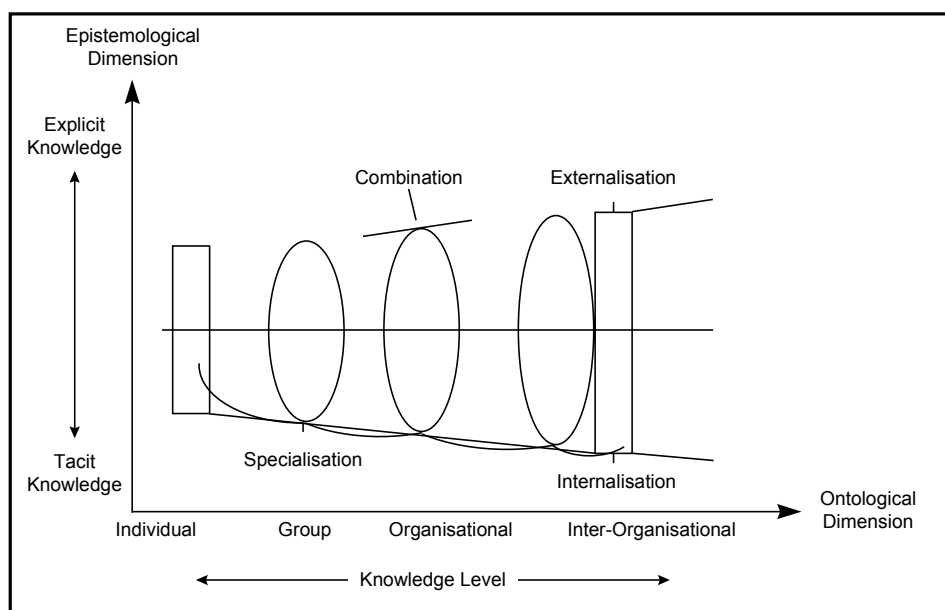


Figure 2.2 The Knowledge Creation Spiral (Nonaka, 1991)

2.2.2 The Framework proposed by D. Leonard-Barton

Leonard-Barton (1995) suggests that knowledge building for an organisation occurs by combining people's distinct individualities with a particular set of activities. It is this combination that enables innovation, and it is this combination that managers manage. The activities that create, channel, and control knowledge are being treated in her approach. Such activities are summarised in table 2.4.

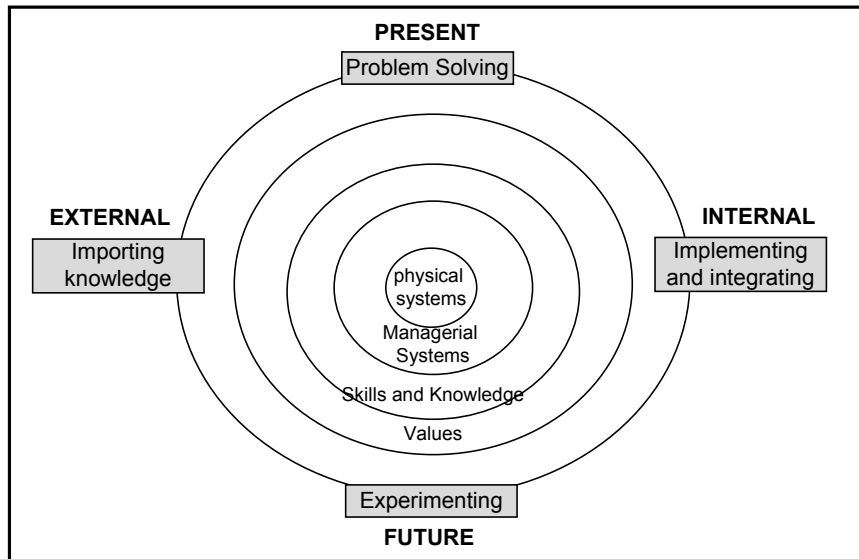


Figure 2.3 Leonard-Barton's framework (Leonard-Barton, 1995)

Leonard-Barton uses the term technological capability to encompass the system of activities, physical systems, skills and knowledge bases, managerial systems of education and reward, and values that create a special advantage for a company or line of business. Such systems may be considered supplemental, enabling, or core. Supplemental capabilities are nice to have but unessential. Enabling technological capabilities are those that are important to a company as a minimum basis for a competition in the industry but that, by themselves, convey no particular competitive advantage. Core technological capabilities, by contrast, are those that set the company apart from the rest of the pack and at least potentially provide a competitive edge.

Shared problem solving	<ul style="list-style-type: none"> • signature skills (preferred tasks, preferred cognitive approaches, preferred technology) • creative abrasion • managing specialisation and diversity on cognitive styles
Implementing and integrating new technical processes and tools	<ul style="list-style-type: none"> • creating “buy-in” • embodying knowledge
experimenting and prototyping	<ul style="list-style-type: none"> • strategic improvisation • creating channels for experimentation • the role of failure in knowledge building • learning from prototypes
Importing and Absorbing Knowledge from Outside the Firm	<ul style="list-style-type: none"> • capability gaps and external sources • managing sourcing and knowledge absorption • learning from the market

Table 2.4 Leonard’s Knowledge Creating and Diffusing Activities

Core, or strategic, capabilities comprise at least four interdependent dimensions, two of which may be thought of as dynamic reservoirs, or competencies, and two of which are knowledge-control or -channelling mechanisms.

1. Employee knowledge and skill.
2. Physical technical systems. But technological competence accumulates not only in the heads of people; it also accumulates in the physical systems that they build over time - databases, machinery, and software programs.
3. Managerial systems: The accumulation of employee knowledge is guided and monitored by the company’s systems of education, rewards, and incentives. These managerial systems - particularly incentive structures - create the channels through which knowledge is accessed and flows; they also set up barriers to undesired knowledge-creation activities.
4. Values and norms: These determine what kinds of knowledge are sought and nurtured, what kinds of knowledge-building activities are tolerated and encouraged. There are systems of caste and status, rituals of behaviour, and passionate beliefs associated with various kinds of technological knowledge that are as rigid and complex as those associated with religion. Therefore, values serve as knowledge-screening and -control mechanisms.

Table 2.5 summarises the four dimensions of core capabilities.

Physical Systems	<ul style="list-style-type: none"> • databases, machinery, software programs
Managerial Systems	<ul style="list-style-type: none"> • education, rewards, incentives • they create the channels through which knowledge is assessed and flows • they set up barriers to undesired knowledge-creation activities
Skills and knowledge	<ul style="list-style-type: none"> • employee skills and knowledge
Values and norms	<ul style="list-style-type: none"> • what kinds of knowledge are sought and nurtured • what kinds of knowledge-building activities are tolerated and encouraged • systems of status, rituals of behaviour and beliefs associated with various kinds of technological knowledge serve as knowledge-screening and -control mechanisms

Table 2.5 Leonard’s Dimensions of a Core Capability

2.3 Frameworks that Focus on knowledge processes

The vast majority of the existing frameworks focus on the so-called ‘knowledge processes’ that are taking place during the ‘knowledge life-cycle’. Representative frameworks include:

2.3.1 The APQC Framework

The APQC framework (1997), jointly developed with Arthur Andersen, was among the most general frameworks that depicts the knowledge life-cycle within organisations and identifies the key enablers that support it.

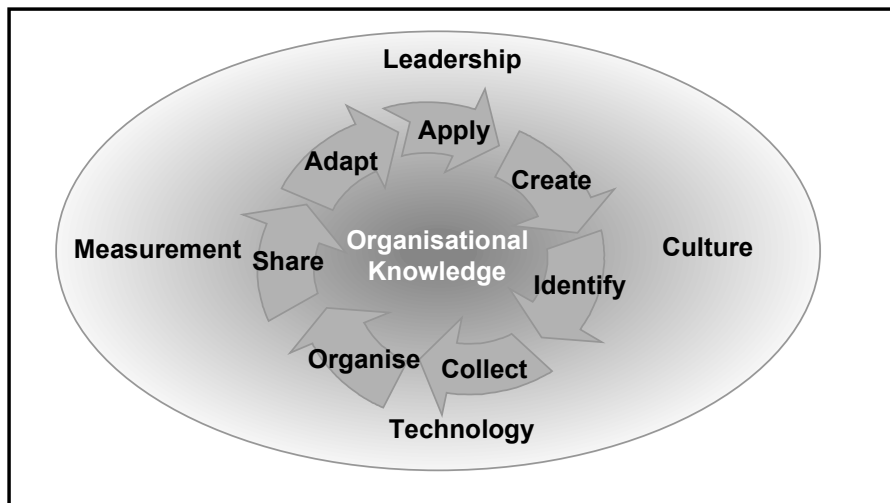


Figure 2.4 The APQC framework (APQC, 1997)

APQC considers internal benchmarking and transfer of best practices to be one of the most tangible manifestations of knowledge management — the process of identifying, capturing, and leveraging knowledge to help the company compete. The environment — cultural and structural — necessary for successful transfer is being illustrated in the light of this knowledge management framework (Figure 2.4). Central to the framework is the process itself. This dynamic process often starts with finding and collecting internal knowledge and best practices. Second is sharing and understanding those practices so they can be used. Finally, the process includes adapting and applying those practices to new situations and bringing them up to best practice performance levels.

Surrounding the process, and helping or hindering it, are the enablers: technology, culture, leadership, and measures. These aspects of an organisation's environment and infrastructure must be addressed in order for the transfer process to have a chance of working.

2.3.2 The Framework of Romhardt and Probst

Another indicative framework that focuses on the 'knowledge processes' developed by Romhardt K. and G. Probst (1997).

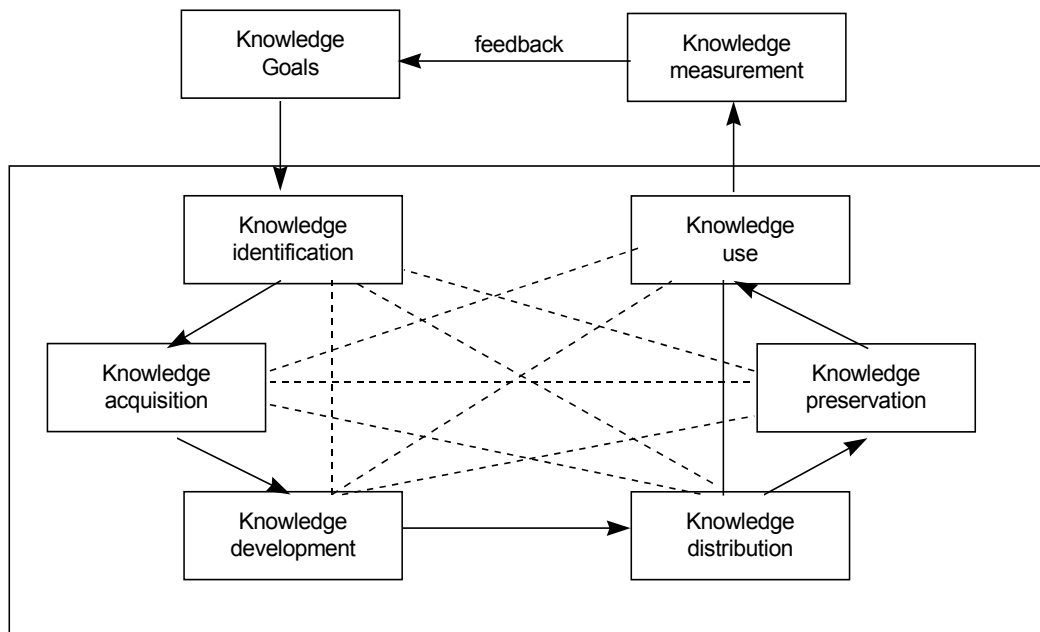


Figure 2.5 Romhardt and Probst's framework (Romhardt and Probst, 1997)

According to the authors, the building blocks of knowledge management represent a conceptualisation of activities which are directly knowledge-related and do not follow any other logic. The design of their building blocks follows certain principles. An 'outer cycle' constructed by goal-setting, action and measurement shows a traditional management process. The feedback-cycle clarifies the importance of strategic aspects in the field of knowledge management as well as the significance concrete goals. The outer cycle stresses the importance of measuring the variables in order to focus on goal-oriented interventions.

The 'inner-cycle' consists of the building blocks of identification, acquisition, development, distribution, preservation and use of knowledge. The framework stresses the interdependence of the building blocks so knowledge management activities should never be conducted isolated from one another.

These building blocks claim no theoretical status. They are pragmatic language meant for practitioners. Experience has shown that managers can use the building blocks to better categorise their knowledge problems and through that, deepen their understanding of the fundamental processes. The assessment of suitable instruments becomes easier and they are enabled to put the vague vision of a 'better dealing with the resource knowledge' into operation. The results are hands-on activities with measurable effects.

2.4 Frameworks that Focus on technology

2.4.1 The Framework of Lotus

Lotus (1998), in its framework, is examining four strategic goals as a function of two dimensions: collaboration and organisational scale. According to Lotus, companies gain the most from knowledge management when they map their knowledge activities to sharply defined strategic goals. Lotus and IBM's Knowledge Management Framework identifies four basic business goals that lend themselves to improvement through knowledge management: Innovation, Responsiveness, Productivity and Competency.

Innovation

In businesses characterised by rapid technological changes and compressed cycle times, innovation is often the primary source of sustained competitive advantage. The challenge for many companies is bringing employees together across the boundaries of time and geography to brainstorm, share ideas, and co-create new products and services.

Innovation has been a key objective of collaborative technologies for many years, although most electronic discussion groups veer off course and produce few measurable results. By structuring collaboration to achieve specific objectives or to resolve issues, knowledge management tools drive group interactions beyond the basic interactivity of discussion forums.

Responsiveness

Decades of technology investments have helped companies build systems that manage well-known and well-understood business events. But today's business environment seems to present more unanticipated events — such as the recent turbulence in the Asian financial markets, dramatic changes in technology, or the sudden appearance of non-traditional competitors — for which traditional information technology is necessary but insufficient.

Knowledge management technologies often confer the greatest benefit when they simply help a company sense weak signals and to respond to them by marshalling its human and information resources on an as-needed basis to respond effectively to unexpected events. By identifying the “who, what, where and when” a company can quickly co-ordinate its activities in response to customers and events. In some instances, a company can “mass customise” its existing assets (both physical and intellectual) by tweaking them to meet specific customer needs.

Productivity

A common lament of executives is “we don't know what we know.” Employees are forever re-creating the wheel, failing to leverage learned lessons, best practices and expertise that exist elsewhere in the company. Most knowledge management efforts

concentrate on effectively documenting, cataloguing and distributing such corporate knowledge assets so that the left hand can learn what the right hand is doing. What organisation wouldn't benefit from tapping the expertise and knowledge that resides in its individuals and systems for use in everyday decisions? Or from reusing the knowledge created in one business process in another business process altogether?

Clearly, productivity depends on how well the knowledge created by individuals and groups can be captured and packaged for reuse by others inside (and outside) the company. More than that, however, knowledge management technologies must provide individuals with the tools to discover and mine corporate knowledge that has already been created. Once people find the corporate knowledge assets they need, they can improve upon those assets by applying them to new processes and problems.

Competency

A company that wants to remain competitive must develop its people — both new hires and existing employees. New hires need to learn not only new skills, but also “how things get done around here.” To do so, they read as much as they can, get “on the job” training, uncover resources through browsing the corporate web, enrol in a course of study, and even apprentice with mentors and other colleagues.

Just as important is building the skills and expertise of existing employees. Anything a company can do to support and accelerate such learning is successful knowledge management.

Knowledge management tools and techniques can enhance the discovery and delivery of critical information and training to employees, so that a company can continually improve the skills of its people as a regular part of doing business.

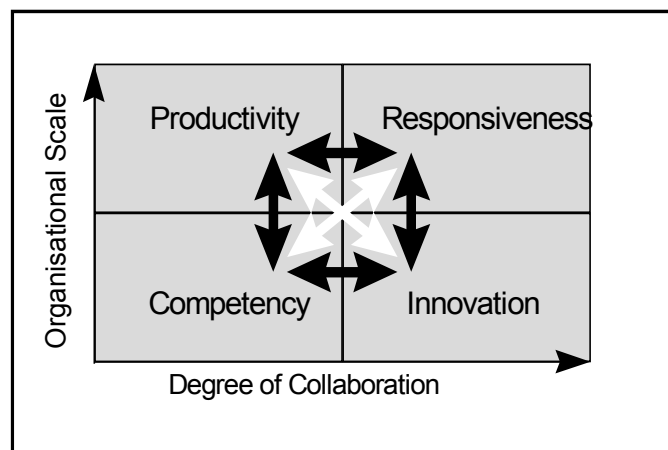


Figure 2.6 Lotus/IBM framework

Collaboration Process

The process of creating, sharing and applying knowledge involves varying degrees of *collaboration*, the first dimension of the Lotus framework. Some knowledge activities, such as individual learning (competency) or reusing well-defined best practices (productivity) require some collaboration, though perhaps not much. In these activities, employees are more likely to find knowledge resources in documents and databases, rather than through interaction with co-workers. Of course, the degree of collaboration varies within a sector itself: an instructor-led course is more collaborative than, say, browsing the Web (even though both are competency-building activities). In general, activities related to competency and productivity are relatively low on the collaboration scale overall. By contrast, knowledge activities related to innovation and responsiveness are much more collaborative. For example, brainstorming sessions (innovation) and strategy planning meetings (responsiveness) are usually highly interactive, involving multiple people. They rank higher on the collaboration axis.

Scalability dimension

The second dimension of the Lotus Knowledge Management Framework is *scalability* — that is, the extent to which knowledge management activities and output can be leveraged throughout the organisation. Competency building and innovation typically occur on a small scale, at the individual or work group level. For example, people may attend conferences, workshops and training sessions to improve their individual competency; however, what they learn is not easily accessible for use throughout the organisation. It is not scaleable knowledge. Only when the output of individual learning or an innovation is packaged for reuse can the results be leveraged throughout the organisation. A company can only perform well in the productivity and responsiveness sectors if it reuses knowledge assets created by individuals or groups and leverages those assets on an organisational scale.

2.4.2 The Framework of Angus and Patel

This framework is used to depict the system objectives that support the knowledge management goals which are Gathering, Organising, Refining and Distributing. Each of these objectives has a host of enabling functions. Knowledge organising, for example, happens through searching, filtering, cataloguing, and linking; see figure 2.6.

The authors use these functions to review and categorise accordingly a number of commercially available technological tools that combined with business practices make these objectives achievable.

Angus and Patel (1998) put four processes revolving around knowledge management: gathering, organising, refining and disseminating (figure 2.6). All can be achieved through automation, through human intervention, or both.

- Gathering is the bringing in of information and data into the system.

- Organising is the process of associating items to subjects, giving them context, making them easier to find.
- Refining is the process of adding value by discovering relationships, abstracting, synthesis, and sharing.
- Disseminating is getting knowledge to the people who can use it.

Each of these processes is supported by products, which in turn are supported by technologies. For an organisation to achieve knowledge management, it will need manual actions or products to support each of the four processes. Because no product is a complete knowledge management support solution, almost all organisations will need to anneal multiple products and redesign processes.

According to the authors, some products were designed to share emergent knowledge, some to share historical knowledge. Emergent is to keep up with current events that might change the actions someone should take today. Historical is gathered to incrementally improve decisions by building up an archive. Products tend to be built around one or the other kind of knowledge.

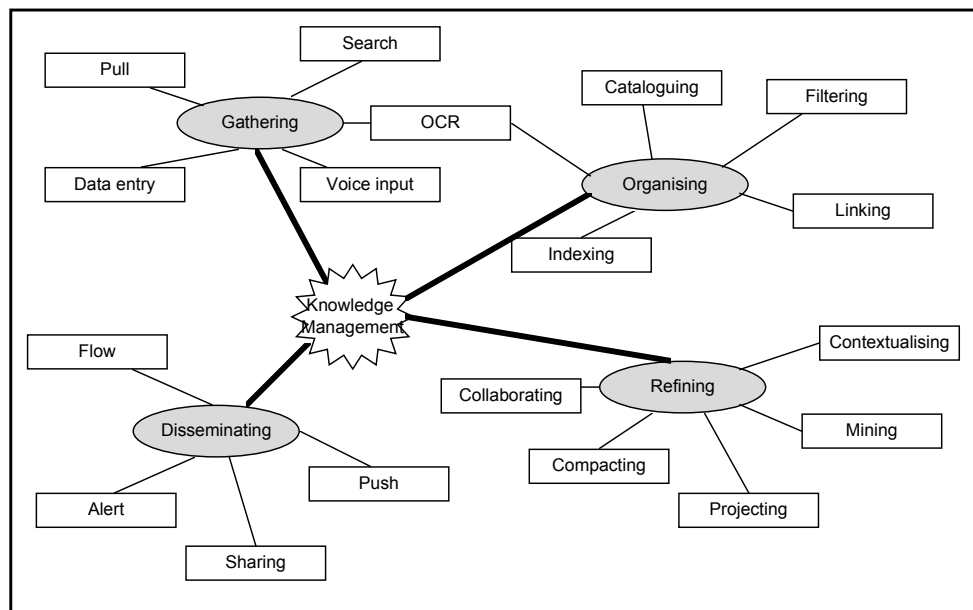


Figure 2.7: Angus and Patel framework (Angus and Patel, 1998)

2.5 Holistic frameworks

The next few frameworks presented below emphasise the interdisciplinary nature of knowledge management.

2.5.1 The ICM Framework of IBM

Leveraging the intellectual capital of professionals is a critical initiative at IBM and the Intellectual Capital Management (ICM) effort is the foundation of knowledge sharing and reuse within the corporation (Huang, 1997).

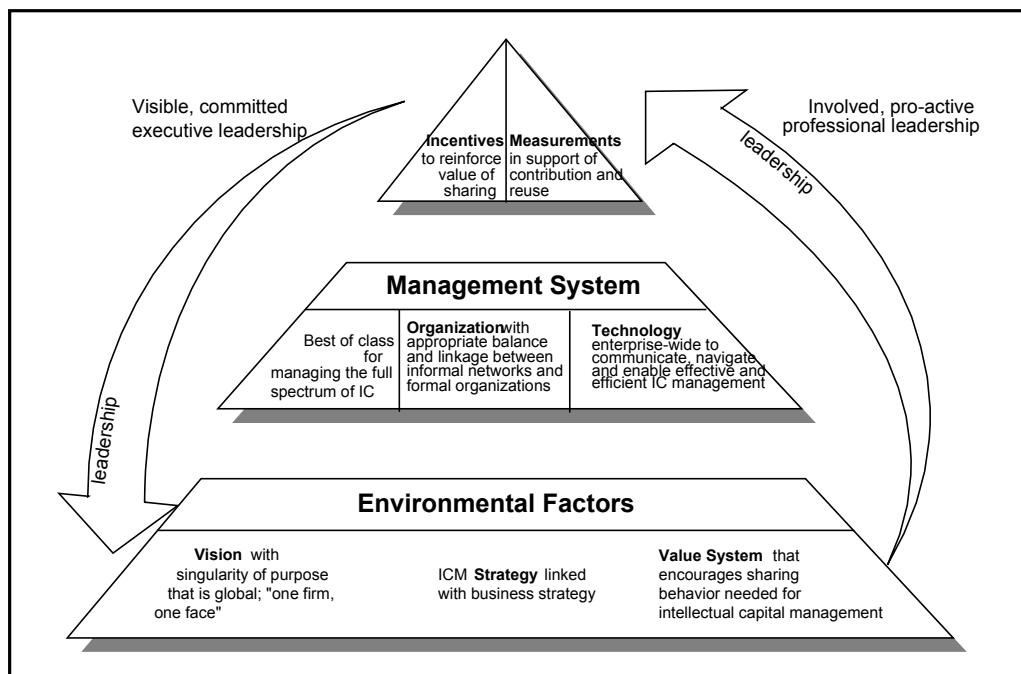


Figure 2.8 IBM ICM framework (Huang, 1997)

ICM is being implemented at IBM through processes based on a management framework that incorporates:

- Vision/strategy/values that value sharing and reusing knowledge and assets. These elements reflect consistent themes that promote internal alignment and present a clear, unified presence to support our customers. Everyone strives toward the same goal with a singularity of purpose and one set of principles.
- Processes for efficiently gathering, evaluating, structuring, and distributing intellectual capital. Standardisation and methodology provides systematic, efficient, and effective capture and retrieval of information while fostering a sense of "one

firm, one faces" globally. Consistent standards and methodology enable reuse by any team, any group, anywhere in the world.

- Communities of professionals with common interests, defined roles and responsibilities. An informal network structure is most conducive to knowledge sharing and enhancement. These networks create a sense of fraternity and bonding. Each provides a natural vehicle for obtaining insights, leveraging experiences, and optimising reuse. Institutionalising these informal network structures minimises external management interference while maximising internal team freedom to act.
- Technology that enables company-wide collaboration and sharing. Information technology plays a key role in building a knowledge infrastructure that can be deployed and accessed globally. In a world where what you can earn depends on what you can learn, those firms that can win are those which are leaders in leveraging technology to support lifelong learning and training for its professionals and to reach to its customers and business partners.
- Incentives/Measurements to encourage intellectual capital contribution and reuse, and to monitor knowledge usage and its value to the organisation. Additional bonuses and recognition by peers are provided for practitioners who have submitted and/or reused intellectual capital. Its use on engagements is now assessed and measured. Changes have been made in the annual performance measurement process, whereby practitioners are measured against their achievement of goals for the year, including intellectual capital contribution and reuse.

The management framework addresses the elements that are critical for establishing a successful system of intellectual capital management.

2.5.2 The Framework of Coopers & Lybrand (pre-merger)

Coopers & Lybrand (pre-merger) developed a framework (Knapp, 1998) that, based on the knowledge life-cycle, elaborates on the key enablers that drive the knowledge processes within organisations.

The six following issues are considered to be the major enablers (see also Figure 2.9):

<ul style="list-style-type: none">• Content• Technology• Learning	<ul style="list-style-type: none">• Culture• Measurement• Personal Responsibility
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Table 2.6 Coopers & Lybrand Framework (Knapp, 1998)

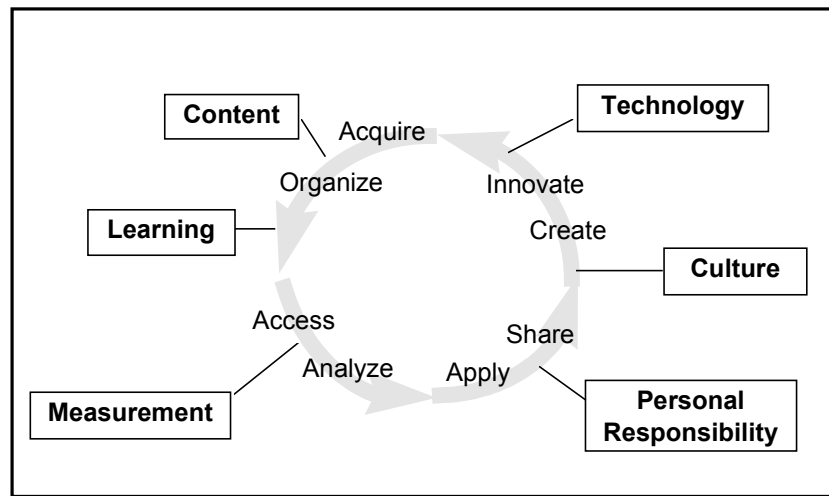


Figure 2.9 Coopers & Lybrand L.L.P. framework (Knapp, 1998)

Content

Content is divided in two groups that include the following elements:

<i>Internal</i>	<i>External</i>
<ul style="list-style-type: none"> • Best Practices • Thought Leaders • Functional Expertise • Knowledge about the company • Know-how • Industry Knowledge 	<ul style="list-style-type: none"> • Business Information • Industry Research • Publications • Public/Private Databases • Academia • Symposia

Technologies

Technologies include:

- Collaborative computing tools (Notes, intranet, Internet)
- Display, navigate and search engines
- Data storage technologies
- Infrastructure (including voice and video)
- Competencies and innovation

Learning

The Learning element includes:

- Attitude of learning organisation
- Focus on competency development
- Continuous learning model

- Distance learning capability

Culture

The Culture element includes:

- Value
- Behaviour
- Trust
- Teamwork
- Change management

Measurement

The Measurement element includes:

- Improved client service
- Increased productivity
- Creation of knowledge capital
- Speed of distribution and sharing
- Enhanced accessibility
- Increased extent of re-use
- Participation and usage
- Personal Responsibility

Personal Responsibility

The Personal Responsibility element includes:

- Sharing
- Client confidentiality
- Continuous growth
- Proactive support of value
- Proposition

2.6 The Holistic Knowledge Asset Framework

The Holistic Knowledge Asset Framework starts and ends with the customer as the primary focus at all times. Organisations are in business to serve customers well and it is knowledge that strategically underpins this. Creating a customer-focused knowledge management strategy and framework is the first step to harnessing and managing the knowledge assets for the benefit of the business.

However, to serve the customer well requires the organisation to have excellent business processes in place, together with highly competent people to perform them. Although each organisation is different, and may choose to categorise and name its business processes differently, the key or 'mega' processes to do business revolve around selling, serving, developing people, and creating new products and services.

It is not sufficient merely to focus on the customer in each of these key process areas. Attention must be paid to the obvious inter-relationship between the processes themselves. Although this is natural in small organisations, specialisation and fragmentation in large organisations means that people tend to concern themselves with their own business process domain.

Knowledger enables large global organisations to think and act 'as one'. It starts at the high-level enterprise model by considering the whole customer focused business process. Selling existing products and services leads to serving the customer well. In turn this will enable the people in the organisation to develop, which then enables the creation of even better products and services. This reflects back into the selling process... and so the upward spiral goes on.

Leveraging and managing knowledge

Underpinning every business process, in fact underpinning every aspect of any business, is knowledge. Underpinning the sales process is both the best knowledge of selling (process knowledge) and the best knowledge of customers, competitors, industry etc. (content knowledge). Underpinning the serving process is both the best practices knowledge and knowledge of the particular serving events taking place. Underpinning the developing people process is knowledge of how best to develop people and the knowledge derived from learning experiences and competencies gained etc. Underpinning the research and development process is the best knowledge about the best R&D process and best knowledge about the particular products and services being developed etc.

However, knowledge in an organisation is often fragmented as specialised knowledge that embeds itself throughout the organisation. It is quite static, existing as 'islands of knowledge' in the heads of key individuals and that remain within a key business process domain. This knowledge needs to be opened up, unblocked, and circulated throughout the organisation fast. The results on business performance from doing this are extraordinary.

Knowledger - a system for sharing explicit knowledge

Knowledge within an organisation can be opened up and more easily and quickly shared if it is made explicit in a form that uses the best communications and information technologies. This explicit knowledge means that knowledge in the heads of the people is turned into 'communicable information' for others to more rapidly assimilate and develop their knowledge.

For each key business process, Knowledger has developed and integrated the key databases of information that underpin the business processes separately, into the organisational knowledge flow, as a whole. Although organisations may already have many of the databases in place, they have not been able to integrate them into an organisational knowledge flow. Knowledger makes this possible using groupware

technologies. Knowledger electronically links and enables knowledge workers in the organisation to communicate, co-ordinate, collaborate, learn and share in radically and fundamentally new ways. It opens up, unblocks, and creates knowledge highways.

Knowledger - a system for creating and renewing tacit knowledge

The most powerful and valuable knowledge of all is 'tacit' knowledge. The key to extraordinary knowledge management in organisations is the ability to constantly share and renew tacit knowledge as fast as possible. Knowledger provides the tools to implement a new organisational knowledge management process that turns tacit knowledge into explicit knowledge as a daily routine.

Finally, within Knowledger, the key metrics for each of the underlying databases have been identified and integrated into a 'knowledge capital' statement. The results are presented as Customer; Structural and Human capital.

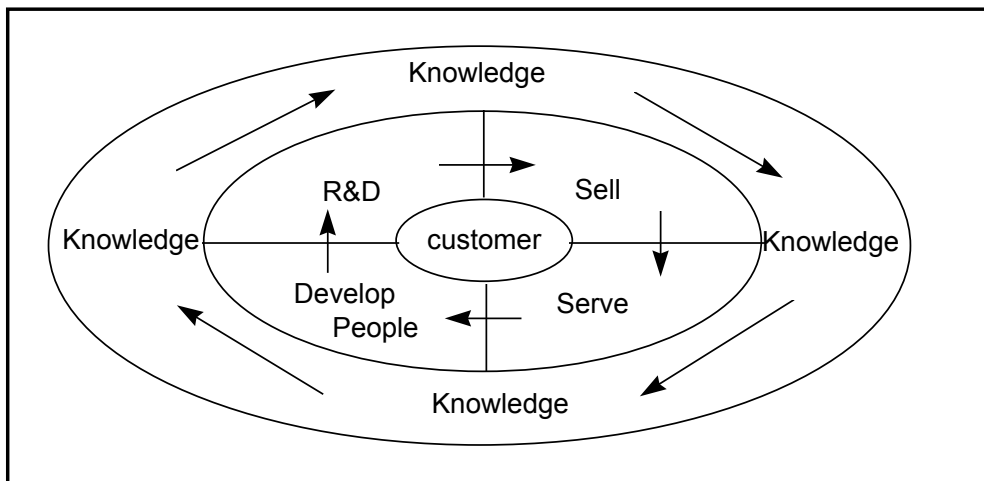


Figure 2.10 The Knowledger framework [Young (1998)]

3.0 Directions of Knowledge Management Projects

It is true that the practical initiatives on knowledge management in the real world do reflect to some extent the theoretical background of this discipline. Firms however, have tried and used existing management approaches and tactics as levers to assist in getting going with knowledge management. Existing initiatives and programs frequently jump-start knowledge management by applying other techniques (such as Total Quality Management) that, although in an indirect manner, have organisational knowledge as an important ingredient. To make headway with knowledge management companies embark on different activities along multiple fronts - technical, organisational, cultural - rather than focusing on a single topic. In this perspective practical knowledge management initiatives can be categorised in different types, depending on the key areas they put emphasis on (De Long *et. al.*, 1997), or the objectives they put (Davenport *et.al.*, 1996). Five broad types have been identified: knowledge repositories; knowledge access; knowledge environment; knowledge assets; and knowledge creation.

Knowledge Repositories

Much of the energy in knowledge management has been spent on treating knowledge as an “it,” an entity separate from the people who create and use it. The typical goal is to take documents with knowledge embedded in them—memos, reports, presentations, articles, etc.—and store them in a repository where they can be easily retrieved. Another less structured form of knowledge as an “it” is the discussion database, in which participants record their own experiences on an issue and react to others’ comments. Three common types of repositories are for:

External knowledge, e.g., competitive intelligence. A turbulent business environment increases the importance of organisational intelligence systems. External knowledge repositories range from information delivery “clipping services” that route articles and reports to executives to advanced customer intelligence systems. The electronic information avalanche, combined with increasing complexity, specialisation, and the speed of market changes has raised the knowledge component of these systems. External intelligence systems are an easily overlooked type of knowledge management project. Hewlett-Packard, is currently developing systems to provide marketing intelligence for both domestic and international business units. These systems will require editors, reporters, and analysts to synthesise and provide context to the tremendous volume of market information available.

Structured internal knowledge, e.g., research reports, product-oriented marketing materials, and techniques and methods. For example, Skandia, the Swedish-based financial services company, has cut its start up time for operating units in new countries from seven years to seven months by packaging its cumulative experience into

administrative modules that enable it to reduce costs while expanding international operations much faster.

Informal internal knowledge, e.g., discussion databases full of know-how, sometimes referred to as “lessons learned”. This is softer, more experiential knowledge that must be interpreted and adapted by the user in a new context. Efforts often involve sharing learning through a data base like Lotus Notes, and they may also take on a more interpersonal approach, using face-to-face sharing of stories and experiences.

For example, the US Army’s Center for Lessons Learned is now at the heart of an elaborate infrastructure developed for capturing and sharing new knowledge gained from field operations.

Some firms are also using “artificial intelligence” software to manage knowledge, particularly in relatively narrow domains such as customer technical support. These might be classified as repositories of structured internal knowledge.

Knowledge Access

While capturing knowledge is the objective of the knowledge repository, other projects focus on providing access to knowledge or facilitating its transfer among individuals. These projects recognise that finding the person with the knowledge one needs, and then successfully transferring it from one person to another, are difficult processes. If the metaphor of a library is useful for conceptualising knowledge repository projects, then the Yellow Pages represents the purpose of knowledge access projects. The underlying strategy here is to facilitate connections between those people who possess and those who need knowledge. For example, Teltech, a small firm based in Minneapolis, has created a network of external experts for clients who seek technical expertise in a specified domain. One project at Hoffman-LaRoche created a “knowledge map” of the new drug application process. This map made clear what knowledge would have to be developed and packaged to answer the questions that customers - in this case, FDA regulators -- wanted answered before approving a particular new drug.

Knowledge Environment

A third type of knowledge management project involves attempts to establish an environment conducive to more effective knowledge creation, transfer, and use. In this category exist projects that intend to build awareness and cultural receptivity to knowledge, initiatives attempting to change behaviour relating to knowledge, and attempts to improve the knowledge management process. Some companies addressed the processes by which knowledge is created, shared, and used. At a general level, a process orientation meant developing measures of the speed, cost, impact, and customer satisfaction of the knowledge management activities. At a more detailed level, the approaches of process improvement and reengineering were also applied to knowledge

management in some projects. These approaches involved describing the desired steps to be followed in the process of knowledge management.

Knowledge Assets

Virtually all firms possess structured intellectual assets, such as patents, copyrights, software licenses, and customer databases. Recognising that these assets create both revenues and costs for the firm, another type of project seeks to manage these assets more judiciously. A fourth type of project focuses on managing knowledge as an asset. One way this is being done is to begin treating knowledge like any other asset on the organisation's balance sheet. Skandia takes an internal audit of the company's intellectual capital every year and includes this information in its annual report to stockholders. One goal of this analysis is to persuade investors of the value of Skandia's knowledge capital. This also focuses the organisation's attention on how it is increasing or decreasing its effective use of knowledge assets over time.

Knowledge Creation

Finally, another type of project seeks to enhance or create new knowledge-intensive products, services, and processes. By recognising the potential market value of knowledge that the firm is generating, the value of existing offerings can be enhanced or new revenue sources created. For example, AutoDesk recognised that the engineering designs created by customers using its product AutoCAD was source of potential design knowledge. It is buying these designs from its customers and will re-sell them to other firms wanting a "head start" on designs in similar areas. In another case, many high technology companies are working together in the Customer Support Consortium to capture and leverage knowledge in customer support processes.

4.0 Limitations of Existing Frameworks

A Knowledge Management framework is a conceptual model that should facilitate managers undertaking a knowledge leveraging effort which provides an overview of the issues to be tackled. In the past years, many scientists and consultants have presented their models and approaches of knowledge management; some typical and well known examples of them have been presented herein. The basis of most models is a knowledge (or learning) circle influenced by varying basic conditions and hindered by certain learning barriers. In some models, different types of knowledge are distinguished (e.g. implicit versus explicit knowledge) and stressed. Sometimes knowledge assets are not discussed at all with emphasis falling on knowledge-related processes.

We believe that a 'right model' of knowledge management does not exist and the different efforts to conceptualise one are the result of different scientific interests and

observer perspectives. The criteria for the evaluation of a model is its usefulness in relation to a chosen context.

The main criteria for Holistic Knowledge Asset Framework are that the framework:

- leads to operational issues; i.e. that the framework facilitates the operational issues of a knowledge management effort and hence it should not be theoretical only, but provide the elements for a corporate KM effort;
- is complete, i.e. outline all the elements that should be examined when implementing a knowledge management initiative and not partial and focusing only on one aspect (e.g. technology or processes).
- covers all inter-relationships, in that it examines also the links as well as synergy between various elements, so that the KM effort is integrated.

It is true that most existing frameworks are used primarily as useful tools for helping the executive team think about knowledge strategy in the context of how a company competes. Frameworks also help business people communicate with information technology staff about key objectives and trade-offs, since almost every company will have to decide where its most immediate knowledge management opportunities and need for improvement exist.

For the Holistic Knowledge Asset Framework is more than that. It aims:

- to provide a list and analysis of all the elements to be examined within the methods and their relationships
- to facilitate the derivation of the high level requirements of user companies, i.e. a first and fast application of the framework to user companies
- to guide the further development of methods

A large number of available frameworks are clearly not holistic enough in the sense that it will explicitly address both the ‘soft’ and ‘hard’ issues of knowledge management (culture, management and technology). The Holistic Knowledge Asset Framework aims to represent this concept straightaway. It should represent the basic idea that knowledge management requires expertise in strategy development, business process design, change management and people issues as well as technology infrastructures.

We believe that successful knowledge management requires an unusual combination of human, technical, and economic skills. These attributes must be present not only in a knowledge management initiative but also in the underlying framework.

Those frameworks that are holistic, do not necessarily depict in a balanced and structured way the important elements of knowledge management. A balanced representation is necessary to convey straightaway the issues one should address, which of them are more important than the others and how are they related to each other.