



ESTIMATING RETURN ON INVESTMENT (ROI) FOR KNOWLEDGE MANAGEMENT (KM) INITIATIVES: An Information Technology (IT) Perspective¹

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Consulting

Knowledge Management is a way of doing business that is knowledge-centric. It is based on the premise that knowledge is a key differentiator of successful organizations. The KM approach to doing business provides a framework for designing processes, functions, procedures, and position descriptions. The benefits of implementing KM stem primarily from implementing the knowledge-centric processes. In this context, IT is considered the principal enabler of KM processes because it provides the tools and power to accelerate, streamline, and otherwise support KM processes such as:

- Knowledge harvesting and creation
- Knowledge validation
- Assimilation of best practices
- Knowledge storage
- Knowledge sharing and reuse

“WHAT IS THE RETURN ON INVESTMENT?”

This is a manager’s key question when valuing and prioritizing investment alternatives. It is an essential component of a business case. Managers like this question because it lays out in a straightforward manner what the project means in terms of dollars. How this question is answered can determine the life or death of an investment initiative.

This paper will address estimating ROI from an IT perspective because the IT organization is central to the justification, purchase, and implementation of these tools.

In the KM world, the purpose and benefit of a project tends to be somewhat nebulous. KM advocates use esoteric terms like “creating a learning organization,” “harvesting tacit knowledge,” or “leveraging intellectual capital.” Amrit Tiwana, recognizes the difficulty of measuring or valuing KM projects when he says, “Conventional metrics fail to do justice to the measurement of return on knowledge investments...”²

Given the fact that “...an increasing number of companies are taking steps to build business cases for KM investments,”³ how does one approach the practical problem of measuring something that is difficult to measure? I propose that this be done by applying a combination of traditional methods and non-traditional methods.

¹ © Copyright BEI Consulting 2003. All rights reserved.

² Amrit Tiwana, *The Knowledge Management Toolkit*, Prentice Hall, 2000.

³ Dawne Shand, *Return on Knowledge*, 2000, DestinationKM.com.

WHAT IS VALUE?

It is a truism that “Value is defined by the buyer, not the seller: something is worth what someone is willing to pay for it.”⁴

There are a variety of valuation models developed or modified for application to KM initiatives. The following summaries of noted valuation models provide a backdrop for this discussion of valuation of knowledge management initiatives.

Intellectual Capital

Intellectual capital is the “valuable knowledge held as a shared asset among employees or the expertise of individual employees.”⁵ Intellectual capital is a valuable component of the knowledge organization. It is often held that intellectual capital is the difference between the stock price of the company and the book value.

The Skandia Navigator

The Skandia Navigator is a measurement model developed in order to value tangible and intangible components of a business. It consists of five components:⁶

- Financial
- Customer
- Process
- Renewal and Development
- Human

Balanced Scorecard

Balanced Scorecard measures include:⁷

- Financial Perspective
- Customer Perspective
- Internal Business Perspective
- Innovation and Learning Perspective

Intangible Assets Monitor

You need to have a very good understanding of your corporate goals and objectives. According to Karl Sveiby, the intangible assets monitor defines three types of intangible assets that account for the book-to-market discrepancy in the value of many companies: individual competence, internal structure, and external structure. “Sveiby believes that people are the only true agents in business and that all assets and structures, whether tangible or intangible, are a result of human actions.”⁸ The measures in the intangible

⁴ Thomas Stewart, *Intellectual Capital, The New Wealth of Organizations*, 1997, Doubleday/Currency.

⁵ Melissie Clemmons Rumizen, *The Complete Idiot's Guide To Knowledge Management*, 2002, John A. Woods, CWL Publishing Enterprises.

⁶ Melissie Rumizen, *The Complete Idiot's Guide to Knowledge Management*, 2002, John A. Woods, CWL Publishing Enterprises.

⁷ *Harvard Business Review on Measuring Corporate Performance*, 1998, Harvard Business Review.

⁸ Chief Information Officer, *Metrics Guide for Knowledge Management Initiatives*, 2001, Department of the Navy.

assets monitor are selected to have maximum impact on the corporate goals and objectives.

This measures:

- Human competence
- External structure
- Internal structure

Knowledge-centric Organization

The US Navy metrics model provides for a classification of both KM metrics and the processes to which they apply. The US Navy Knowledge Centric Organization (KCO) model groups metrics into three categories relating to the classifications of the characteristics they are intended to measure. These measures are primarily process-focused. They are:

- Outcome Metrics
- Output Metrics
- System Metrics

Outcome metrics measure high-level or strategic characteristics of the organization such as overall enterprise productivity. *Output metrics* measure tactical or process characteristics such as time to solve problems. *System metrics* apply to measurable aspects of the process itself such as number of queries.

This model goes further to describe the primary classes of business objectives for a KM initiative. These classes are:

- Program and Process Management
- Program Execution and Operations
- Personnel and Training

Program and Process Management applies to organizational strategies and objectives.

Program Execution and Operations includes topics such as collaboration.

Personnel and Training addresses objectives such as learning and quality of life.

An illustration of the Navy metrics framework is shown below.

CLASSES OF BUSINESS OBJECTIVES	METRICS CATEGORIES		
	Outcome Metrics	Output Metrics	System Metrics
Program & Process Management	X	X	X
Program Execution & Operations	X	X	X
Personnel & Training	X	X	X

Exhibit 1 -Department of the Navy Knowledge Management Metrics Framework

The Navy model proposes a modification of the modified Balanced Scorecard⁹ oriented toward the strategic management of information systems. It emphasizes that the success of a measurement program is based largely upon selecting the proper measure. It is essential to fit the measure to the situation. One must consider the audience for the measures (or ROI), the scope of the initiative, and the relevance of the measures to the initiative. The Navy model recommends brainstorming the audience and the purpose of the measures to ensure that a complete and relevant list of measures is derived. It further recommends that the measures be reconciled with the organizational objectives and suggests ideas for measures for the various classifications of metrics for the corresponding types of KM initiatives.¹⁰

The Navy model's framework provides a very good order for categorizing the measures associated with KM initiatives. It is largely process oriented (which corresponds to the KM construct) and addresses many of the same "difficult to measure" issues in the areas of intangibles as other more traditional approaches. The model's framework approaches those same intangibles with similar methods such as surveys, interviews, and workshops. It is thoroughly and logically defined and can be readily adopted for organizing KM initiative metrics. I find the framework to be well researched and a practical framework for developing metrics for KM initiatives. Later in this paper, I will propose an alternative framework that I find equally effective.

PREREQUISITES

Before I propose an alternative model, I'll discuss some fundamentals including:

- Analytical Rigor
- Comparing Apples
- Preparation

Analytical Rigor

An ROI is a dollar calculation. Therefore, factors considered must have an actual or assigned dollar value. Its intent is to capture the Total Costs of Ownership (TCO)¹¹ over the life of the initiative (rarely more than 10 years).

Calculating the ROI is essential to demonstrate the dollar value of any initiative to management. It is a relatively simple calculation once all of the estimated costs and savings are determined. Ideally, this calculation should be accomplished during the formative stages of a KM initiative as part of the justification of the investment.

It is essential that the data that is assembled for the ROI be thorough. It must include all factors. It must also be consistent. If licensing costs are shown for the status quo, then they must also be reflected for the new initiative.

⁹ M. Martinsons, R. Davison, D. Tse, "The Balanced Scorecard: a foundation for the strategic management of information systems," *Decision Support Systems*, 25 (1999) 71.

¹⁰ Chief Information Officer, *Metrics Guide for Knowledge Management Initiatives*, 2001, Department of the Navy.

¹¹ Brio White Paper, *Assessing the Value of Business Intelligence*, November 2, 2001.

To ensure a comprehensive analysis, be sure to address all of the key components:

- People
- Processes
- Products
- Tools
- Resources
- Customers

A Cost-Benefit Analysis encompasses factors with dollar values and those without thereby providing a broader and more realistic view of a decision for KM initiatives. Since KM initiatives typically offer intangible benefits, this method of analysis is preferred.

Comparing Apples

When measuring costs, it is essential that the costs assembled apply to the process that will change as a result of implementing the evaluated alternative/initiative. If only one quarter of the organization is affected by the change, then only the costs associated with that one quarter are applicable to the analysis.

The factors must be consistent. The comparison must be structured to compare “apples to apples.” For example, if the status quo process costs include licensing fees, then the costs for the alternatives being evaluated must also include licensing fees if they are applicable.

Preparation

Calculating an ROI requires a complete understanding of how the process is currently being accomplished. It is fundamental when calculating ROI to compare the investment initiative with the status quo. Therefore, considerable information must be collected on the current process. This “baselining” is essential to ensure a valid comparison. Ideally, information should be collected in the same cost categories as are applied to the investment initiative to ensure that like values are compared.

During this phase, it is important to develop a methodology document that defines the steps to be taken, the sources of data, the assumptions, and the constraints used for the estimate.

A variety of complex and theoretical frameworks for estimating the benefits of Knowledge Management exist.¹² I prefer a more pragmatic approach based upon traditional methods but tailored to specifically address the various intangibles and other complexities associated with KM.

Knowing that “there is no one good way of measuring the benefits that result from the effective management of knowledge within a company,”¹³ we should strive for a

¹² Joseph Firestone, PhD, *Estimating Benefits of KM Initiatives: Concepts, Methodology and Tools*, Knowledge and Innovation Journal.

¹³ Amrit Tiwana, *The Knowledge Management Toolkit*, 2000, Prentice Hall PTR.

comprehensive analysis but remain flexible enough to customize the approach to fit the initiative being analyzed.

Simply saying that “any new knowledge that is created by a company must add value to the company...”¹⁴ does not solve the problem of justifying to management an investment in KM. So where should we look for measurable results? In a survey of 93 high-performing Knowledge Management projects, the top five outcomes were:¹⁵

- Increased Revenue
- Cost Containment
- Improved Customer Service
- Quality
- Improved Internal Processes

These are admirable outcomes. They definitely indicate that KM results directly affect positive outcomes in the areas that business people rate as essential to success. But we need a model for constructing ROI that is logical, credible, and works, and that can be applied to varying situations.

COST/BENEFIT MODEL

Creating a complete picture of the value of a KM initiative requires that both tangible and intangible factors be included in the analysis. This is essential because many of the benefits of KM are not readily assigned a dollar value. Since ROI is strictly a dollar calculation, intangibles fall outside its domain. Therefore, the cost/benefit analysis is preferred when dealing with KM initiatives. The cost/benefit method divides benefits into two main categories that assist in describing and presenting the measures. These are:

- Tangible benefits
- Intangible benefits

Tangible Benefits

Tangible benefits are basically those that can easily be tabulated or a cost readily assigned to. These include:

- Hardware
- Software
- Communications
- System development costs including design, development, testing, implementation, maintenance, and operations
- Faster product cycle time and other performance measures
- Increased quantity of work
- Cost savings
- Staffing (no longer needed on the process)
- Increased quality (reduced errors)
- Timeliness
- Level of service (if measurable)

¹⁴ Amrit Tiwana, *The Knowledge Management Toolkit*, 2000, Prentice Hall PTR

¹⁵ Amrit Tiwana, *The Knowledge Management Toolkit*, 2000, Prentice Hall PTR

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- Improved timeliness of data access
 - Reduced employee turnover
 - Increased efficiency
 - Increased effectiveness
 - Increased quality of work or decreased error rate
 - Improved accuracy of estimates

Many of these latter items are not typically thought of when assembling cost data for ROI, but they can be measured and a cost figure associated with them. The challenge is measuring the status quo value and estimating the corresponding initiative values consistently because data on these items may not normally be kept in an office environment.

Intangible Benefits

Intangible benefits, also called soft benefits, are the gains attributable to your improvement project that are not reportable for formal accounting purposes. Typically, benefits are not included in the financial calculations because they are nonmonetary or are difficult to measure.¹⁶ Intangibles include:

- Increased customer satisfaction
- Increased quality of decisions
- Employee satisfaction
- Level of service (depending upon the work and products of the organization, this factor may be included in the tangibles category)
- Supports the team effort¹⁷
- Improves collaboration
- Accelerates the rate for new people to become self-sufficient¹⁸
- Improvement in staff morale
- Increased overall level of staff learning/knowledge
- Increased currency of staff knowledge
- Sharing of knowledge
- Employee empowerment
- Improved usefulness of knowledge
- Improved accessibility of knowledge
- Risk mitigation
- Quality of life
- 24x7 accessibility
- Innovation
- Turnover
- Relative position lost to other organizations that are implementing the same initiative
- Losing touch with technological or procedural state of the art
- Losing ability to leverage organizational knowledge
- Electronic storage instead of paper
- Enterprise portals

¹⁶ iSixSigma.com, January 4, 2003

¹⁷ Brio White Paper, *Assessing the Value of Business Intelligence*, November 2, 2001.

¹⁸ Brio White Paper, *Assessing the Value of Business Intelligence*, November 2, 2001.

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- Improved standardization of output/outcomes
 - Value of knowledge
 - Value of innovations
 - Change in quality/accuracy of knowledge acquisition
 - Change in rate of knowledge production such as rate and quality of concept generation or originality
 - Change in rate or quality of knowledge transfer
 - Change in rate of solving problems
 - Time to store knowledge
 - Degree of knowledge sharing
 - Performance through accelerated learning
 - Collaboration facilitated and accelerated
 - Knowledge reuse facilitated and accelerated
 - Training expense per employee
 - Value added per employee¹⁹
 - Competency measures
 - Versatility
 - Motivation

For a detailed discussion of other KM-specific measures, I recommend the Knowledge Management Handbook by Jay Liebowitz.²⁰

A COST/BENEFIT MODEL CONSTRUCT

A high-level view of a cost/benefit construct is illustrated below:

Category	Costs	Benefits
Tangible	X	X
Intangible	X	X

Exhibit 2 - A Cost/Benefit Construct

We will take a more detailed look at these categories here.

Tangible Costs

Typically, tangible costs and benefits may be categorized as:

- Purchase
- Implementation (including change management)
- Maintenance²¹

To this list, I add the category of “Development” to provide the granularity often required of software initiatives.

¹⁹ Jay Liebowitz, *Knowledge Management Handbook*, 1999, CRC Press

²⁰ Jay Liebowitz, *Knowledge Management Handbook*, 1999, CRC Press

²¹ Brio White Paper, *Assessing the Value of Business Intelligence*, November 2, 2001.

Purchase Costs

The cost of purchasing a computer system can ordinarily be determined by including the costs of software, licenses, operating systems, computer hardware, network hardware and communications costs, etc. The cost of computer facilities themselves may or may not be addressed depending upon whether a change is anticipated. Maintenance and operations costs are generally accessible as well. These include labor and overhead costs assigned for programming and computer operations costs such as system administration and help desk. Normally, the agency or company has a standard overhead value that includes costs such as benefits and facilities that is used for this calculation.

Implementation

Implementation costs include the transition to the new process/system. They include the costs of running parallel systems, data migration, development of custom interfaces, etc. They also include costs applicable to the functional user environment such as user training costs, organizational changes, process changes, development of new procedures and/or processes, learning curve, and affects on productivity during the transition that may be initially negative.

Development

Development costs are directly associated with creating or developing a new or replacement system. They include systems analysis, design, programming, and testing of the software.

Maintenance Costs

Maintenance costs include costs incurred after implementation that are required to sustain the initiative. These include system operations, software maintenance, licensing, communications, training, etc.

COST CHARACTERISTICS

Each of the four previous categories of costs can be further described by the following cost characteristics:

- Sunk costs
- Recurring and non-recurring costs
- Cost avoidance

Sunk Costs

Sunk costs²² are typically assembled in an analysis such as this to help put the status quo alternative in perspective. These costs should not be included in the actual ROI calculation because the only factors relevant to the decision about the new initiative are those that can be controlled from the present time forward.

Recurring and Non-Recurring Costs

Costs for tangible items can be divided into two primary categories: non-recurring costs and recurring costs. Non-recurring costs include the baseline and acquisition costs,

²² Costs expended to date on the status quo alternative that are not recoverable.

deployment, telecommunications, development, integration, testing, training, installation, parallel systems, data migration, phase out, and other pure IT costs.

Recurring costs include maintenance costs, operations, upgrades, facilities, staff, ongoing training, contracts, and equipment replacement. Differences in quality, reliability, and level of service may also be included to the extent that they can be measured. A method for doing this is described later.

Cost Avoidance

Cost avoidance is a term used to describe those costs that are avoided by selecting a particular alternative. These costs include costs that would have been required to increase staff to accommodate the resulting increase in the level of service or the cost of increasing staff to accommodate other work rather than freeing up time to do the other work. Cost avoidance refers to costs that would not be incurred if the investment initiative is undertaken; for example,

- Increasing the level of service without increasing cost
- Freeing up staff hours to do other work; i.e., not releasing or returning staff positions or hours outside the organization

The following table shows an example of how the various cost factors can be assembled.

Cost Components	Sunk Cost	As-Is/Status Quo		To-Be	
		Recurring	Non-Recurring	Recurring	Non-Recurring
PURCHASE					
• Hardware					
• Software					
• Communications					
• Staff					
• Process					
• Indirect					
DEVELOPMENT					
• Hardware					
• Software					
• Communications					
• Staff					
• Process					
• Indirect					
IMPLEMENTATION					
• Hardware					
• Software					
• Communications					
• Staff					
• Process					

Cost Components	Sunk Cost	As-Is/Status Quo		To-Be	
		Recurring	Non-Recurring	Recurring	Non-Recurring
• Indirect MAINTENANCE					
• Hardware					
• Software					
• Communications					
• Staff					
• Process					
• Indirect*					

*Indirect = Training costs, time/production lost in transition, etc.

Exhibit 3 - Cost Analysis Template (Recurring/Non-Recurring)

The following table illustrates how the ROI is calculated. Each of the numbered columns refers to years of the KM initiative.

	1	2	3	4	5	Totals
INFLOWS						
Cost Savings						
• Purchase						
• Development						
• Transition						
• Maintenance						
Cost Avoidance						
• Purchase						
• Development						
• Transition						
• Maintenance						
Subtotal (1)						A
OUTFLOWS						
Costs						
• Purchase						
• Development						
• Transition						
• Maintenance						
Subtotal (2)						B
Return per Year (1-2)						

Exhibit 4 - Return on Investment Template²³

$$\text{ROI} = \text{A/B}$$

In order to evaluate potential benefits, one must first itemize them and define them²⁴. This step alone is frequently enlightening regarding the meaning of the benefit. By analyzing each potential benefit, a means of comparison, of evaluation, or of even measurement or assigning dollar values can be determined.

MEASUREMENTS

This section discusses the various measurement techniques that may be useful in capturing the data needed for a cost/benefit analysis or an ROI calculation.

Measuring Tangibles

By definition, measuring tangibles is considerably easier than measuring intangibles. A specific dollar value or other quantitative measure is readily associated with these items, but the basic values still must be researched. Key factors here are accuracy, thoroughness, and consistency.

Cost measurements discussed in this section are:

- Process costs
- Process change costs
- Other related processes
- Level of service
- Benchmarking methods
- Other metrics

Process Costs

Measuring **process costs** (or user costs) is somewhat more complex. One major constraint to consider is the time and funding available to accomplish the measurement. This will determine the level of detail that can be applied to the measurement in an analytical hierarchy. If time and funding are not a problem, detailed work measurement of the current process will provide an accurate indicator of the labor hours associated with each work process. If time and funding are somewhat limited, the labor hours associated with each work process must be estimated. If these factors are very limited, very high-level estimates can be made. These values can be estimated any number of ways. For example, estimates can be assembled by asking someone directly involved with the process to estimate the number of people involved and/or the number of hours per day/month expended in the process. Additionally, these values can be estimated as a proportion of the total staff who are assigned to the organization under study.

Process Change Costs (As-Is versus. To-Be Model)

Knowledge Management is largely process focused. Therefore, the ideal implementation is creating a knowledge-centric organization first and obtaining the applicable enabling

²³ This would actually be done in a spreadsheet where the values in each of the year's columns are adjusted for the time value of money.

²⁴ Brio White Paper, *Assessing the Value of Business Intelligence*, November 2, 2001.

automation tools second or in parallel. Employing the Business Process Reengineering (BPR) metaphor for the process changes, there will be an “as-is” organization, process, and procedures; and there will be a “to-be” organization, process, and procedures. In this context, one must accomplish a “gap analysis” between the two environments. This leads to a focus on only those parts of the organization, process, and procedures that changed, such as:

- Knowledge capture
- Knowledge creation/harvesting
- Knowledge validation
- Knowledge storage/repository
- Knowledge query
- Knowledge retrieval
- Knowledge reuse
- Knowledge use
- Learning organization
- Assimilation of best practices
- User training
- Continuous process improvement

Other Related Processes

Related processes that should be included in the cost analysis are:

- Leadership changes
- Organizational structure changes
- Motivational practices
- Rewards/recognition
- Training practices
- Communications systems

If it is not feasible to address all processes that will change as a result of the initiative, the processes that provide the largest change or impact can be “cherry picked” to conserve analytical resources.

As with all other categories of costs and benefits, user costs must be estimated for both the “as-is” and “to-be” work environments. Determining the “to-be” process costs can be tricky. The main constraint here is not to be overly optimistic as this can set the bar so high that it will be difficult or impossible to achieve and may also adversely affect one’s credibility. The objective is to identify the potential for savings in staff costs. This may include the actual number of staff positions that can be reduced or the staff hours that can be reallocated.

There are several accepted ways to estimate the “to-be” costs necessary to calculate savings resulting from process changes. The first is to discuss the new processes with the people in the organization who are accomplishing the process now. Vendors can typically provide estimates of the savings for the use of their product based upon their direct experience. Next, case studies of other organizations employing similar improved

processes or tools often cite specific savings factors. Normally, these estimates are reflected as a percentage of change that can be applied to the baseline “as-is” figures.

An example of using case study information to estimate potential savings is a user study and findings from a Booz, Allen, and Hamilton survey undertaken at the beginning of Lucent’s first business unit portal project. It showed that some users were spending over 20% of their time just looking for information.²⁵ In this case, if the new system or process can reduce the search time by half, a 10% time savings can be estimated.

Level of Service

Level of service savings can be estimated by getting an industry estimate of the cost to produce the level of service or by estimating a percent change from the status quo.

Benchmarking

Benchmarking employs common measures that focus on performance to permit comparison of one organization against others. It is a popular method of comparing the costs and efficiencies among organizations. Benchmarking can be outsourced or done by the organization under study providing another component of that organization serves as a meaningful comparison. American Productivity and Quality Center (APQC) is one organization particularly noted for its work in this area. If it is not feasible to perform an actual benchmarking study, a similar result can be obtained by comparing the target organization with case study results.

Benchmarking allows an organization to see how it stands in relationship to others. If another organization employed process X or tool Y and reduced their cycle time by 15%, then an organization considering employing that differentiating capability can estimate that they will reduce their cycle time by the same 15%.

Other Metrics

Metrics other than dollars that can support the analysis by measuring characteristics of the process under study should also be assembled or derived. These include cycle time or the time it takes to complete the process once. Other metrics may include number of errors per unit, measures of on-time delivery, number of times the item requires rework, number of pages in a typical report, etc. Many times these metrics can be converted to dollars after they are developed and then can be included in the cost analysis and ROI calculation. For example, if it is estimated that the cycle time can be reduced by 10%, then the savings per unit can be estimated as the cost to produce one item times 10%.

Measuring Intangibles

Intangibles must be included in the analysis of KM initiatives to ensure that the analysis is comprehensive. These fall into two basic categories – those that can be measured and those that can’t. The following is a discussion of how to address those intangibles that typically cannot or are not measured. This discussion is followed by an explanation of what to do if the intangibles cannot be converted into tangibles.

²⁵ Jane DeHaven, *Exploring Portals and Return on Investment*, 2001, Integrated Information Solutions

Converting Intangibles to Tangibles

Measuring intangibles that are typically not measured requires a different methodology than is commonly applied to tangibles, but many of them can still be measured. A start in this direction is provided by Mark Czarnecki in his book *Managing by Measuring*. An example is his approach to measuring the customer satisfaction intangible.

“Customer Satisfaction Measurement (CSM), then, provides that necessary link between the outside world and the products and services of each organization.”²⁶ The author suggests conducting a CSM using the following methods:

- Written surveys
- Telephone interviews
- Focus groups
- Round tables
- Complaint monitoring
- Internal service negotiations

Following Mr. Czarnecki’s lead, I propose that the analytical hierarchy for assessing intangibles is to:

- Measure them by counting occurrences, interviewing workers using a standardized survey that can be administered again after implementation to determine the change in morale for example, surveying customers before and after, assigning an index number to whatever measurement is employed, applying another method, etc.
- Approximate the value by researching text books and/or case studies to determine the estimated values.
- If a dollar value can be assigned, then account for the factor in the tangibles category. If another numeric value can be assigned, then you have an indicator to rate the factor as an intangible.
- Otherwise, accept that the factor is truly intangible and a value cannot be assigned.

The following few examples illustrate how seemingly intangible factors can be converted into tangible values by analysis and measurement.

- Customer satisfaction can be measured as mentioned above in the CSM example. If it is measured as a 7 on a 10 point scale before the initiative and a 9 afterward, a relative relationship can be established. By further analyzing customer satisfaction levels and keeping data on sales or use of the product; it is possible to establish a relationship between customer satisfaction and sales or use of the product. Therefore, a dollar value of the difference in sales or use can be applied.
- Employee satisfaction can often be translated into retention which affects training costs. Again, measuring before and after allows calculation of the change in training costs as a cost avoidance.
- Innovation can be counted as the number of new ideas. The cost savings or increased revenue of these ideas can normally be determined.
- Acceleration of the time for a new staff member to become productive can be measured. If a person becomes productive after two months with the new KM

²⁶ Mark Czarnecki, *Managing by Measuring*, 1999, AMACOM American Management Association

initiative rather than three months under the status quo, one month's productivity is gained. One can assign a dollar figure to the one-month's productivity.

Actual Intangibles

Those intangibles that cannot be converted to tangibles should be addressed in the Benefit component of the Cost/Benefit model. Benefits can be analyzed in three ways.

- List the benefits of each in columns for comparison
- Consider the Pros and Cons of the alternatives
- Rate the intangibles

Listing the benefits of each alternative in columns as shown below allows a one for one comparison of benefits.

Benefits of Status Quo	Benefits of KM Initiative

Exhibit 5 – One for One Comparison of Benefits

Considering the Pros and Cons of the alternatives includes the down side of the alternatives to be assessed as shown below.

Status Quo	Pros	Cons

New KM Initiative	Pros	Cons

Exhibit 6 – Pros and Cons of Benefits

In the past, I have had success in rating the intangibles on a scale of 1-5. This is done by defining evaluation factors or values that describe the intangibles. For example, collaboration can be assigned as a factor. Then each of the alternatives is rated on a scale of 1-5 for that factor. If this is done for all intangibles, a total score can be computed for each alternative. If necessary, weights can be applied to the factors to represent their relative importance.

KNOWLEDGE MANAGEMENT VALUATION PROCESS

“Knowledge management valuation is the process used to determine the value that will be created and protected by a proposed knowledge management strategy or project.”²⁷

The knowledge management valuation process developed by Mark Clare and Arthur Detore of Lincoln Re, has six steps.²⁸

²⁷ Melissie Clemmons Rumizen, *The Complete Idiot's Guide To Knowledge Management*, 2002, John A. Woods, CWL Publishing Enterprises.

²⁸ Mark Clare and Arthur Detore, *Knowledge Assets: A Professional's Guide to Valuation and Financial Management*.

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- Identify opportunities
 - Scope the project
 - Develop an operational model
 - Discover value drivers
 - Develop a valuation framework
 - Test and refine scenarios

This rigorous, complex, and extremely detailed methodology can still provide general direction to the process of valuing knowledge management. This six-step valuation process provides a structure to get started valuing KM initiatives.

CONCLUSION

In conclusion, it appears that KM initiatives are more difficult to assess in terms of their dollar value to the organization. However, application of the cost/benefit analytical model offers a means to add clarity to the analysis and presentation of results. By measuring factors that can be measured, such as decreased cycle time, the core costs can be determined. Further, use of various techniques to convert what appear to be intangibles into tangibles strengthens the ROI calculation. Portrayal of remaining intangible factors in a concise and comparative fashion adds credibility and understanding of intangibles for the decision maker.