Measuring Knowledge Management

Released August 2002
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The American Productivity & Quality Center (APQC) conducted its first examination of knowledge management (KM) at a Knowledge Imperative Symposium in 1995, at which time organizations were simply trying to come to grips with the power of sharing and reusing knowledge for business purposes. While KM has become a widely accepted business practice in the interim, companies still struggle to measure the gains it purports to offer. As APQC begins its 10th best-practice consortium study in KM (*Using KM to Drive Innovation*), measuring the success of knowledge management efforts still vexes many organizations. An 11th KM study by APQC, which will kick off in the fourth quarter of 2002, will focus on this critical component of KM.

We'd like to examine this topic and offer a preview of what the KM measurement study might uncover. First, we will talk about the importance of measures. Second, we'll discuss why determining the return on investment (ROI) of KM efforts is so important to the long-term viability of a KM initiative. Third, we'll talk about one method to develop effective KM "leading" and "lagging" measures to help ensure that employees are sharing and reusing knowledge to improve business processes. Finally, we will outline how effective measures can foster the people and process changes necessary when embarking on a KM initiative.

The Importance of Measures

In these budget-constrained, uncertain economic times, KM practitioners need to be able to show the business value that knowledge sharing and reuse bring to their organizations. Most businesses use measures to derive metrics that show performance or effort. Measures outline the information or data a company or person wants to gather (for example, customer satisfaction, productivity of workers, or cost savings). As APQC defines them, metrics are normalized quantitative measures usually used to gauge operational performance or resource allocation such as cost per square foot, invoices per full-time employee (FTE), or production run time. When an organization builds effective measures and tracks metrics around knowledge sharing, then tracking the success of implementation, identifying key milestones, and showing return on investment become possible.

There are two things that all organizations should keep in mind as they develop measures and metrics. First, it is extremely difficult to create any measure of knowledge sharing that will show an absolute one-to-one correlation between a knowledge-sharing action and a business result. Much like measuring the success of training and development programs, measuring the impact of knowledge sharing requires correlation and some assumption. Second, to truly understand the impact of knowledge sharing and reuse, an organization must first understand the baseline business or process performance before beginning KM efforts. If you do not know where the starting line is, how can you say what your time is at the finish line?

ROI is critical

One of APQC's adages has long been that organizations should not expect to see a significant ROI from KM too quickly. ROI takes time to gather due to the complexity of understanding the impact that people,

process, content, and technology have on knowledge sharing, and subsequently, the business. Many senior executives embark on the KM journey by taking a leap of faith because they understand that sharing and reusing knowledge just makes good business sense. However, the price tag of aligning people with tools, content, and processes that facilitate knowledge flow is not small. In the late 1990s, when IT money seemed to flow ceaselessly, many organizations had the leeway to work through many of the growing pains of establishing KM without the strict cost pressures we see today. Now, management needs to understand the value of each investment and weigh it against the potential gains from other change efforts. Showing ROI for KM is critical. Many KM programs use both success stories and measures to develop this ROI case.

APQCs best-practice research indicates that most organizations spend hundreds of thousands, and in some cases millions of dollars buying and implementing technology tools, publishing and validating content, developing people and expert resources, and redesigning work processes to support more efficient knowledge sharing. In a recent Ziff-Davis article on KM, Prudential Insurance highlighted its efforts to build a KM system to support its sales force. "The software cost less than $500,000. Creating new content and organizing existing information ran another $500,000. In the financial world, where regulations and products change continually, keeping the information up to date-with high-priced lawyers reviewing material for compliance-turned out to be an expense itself: roughly $300,000 per year."

Many organizations have turned to storytelling and anecdotal success stories to show the value of the investments made in KM. Stephen Denning of the World Bank has written a book on the power of storytelling, and companies like Xerox, Chevron, and Schlumberger all have worked to create a virtual coffee bar where success stories are told. However, while stories help to personalize the effects of knowledge sharing, many managers want proof. That's where effective measures and metrics come in. Sir John Brown, CEO of BP, uses the following example when explaining BP's KM initiative: "Every time we do something again, we should do it better than the last time. Deep-water drilling is a good example. In 1995, we spent 100 days drilling a deep-water well. We now spend 42." This is a good example of developing a story out of metrics. BP knew how long it took to drill a deepwater well before it began systematic knowledge sharing and measured the time after implementation. The result is a story that people can relate to and numbers that people can believe.

So now that we've said that measures and stories are good ways to show management the return on investment of KM, what ROI should you expect? Each organization is different, but based on information from a handful of best-practice organizations, ROI for KM investments ranges anywhere from 2.5:1 all the way up to over 10:1. (This figure is an approximation.) The following table shows several organizations, their KM value proposition, KM approach, and results (with investment and ROI in bold). In some instances organizations did not reveal their initial investment but did delineate results; all noted that they are receiving more from sharing knowledge than they paid for the capacity to do so.

Organization	Target Value Proposition	Approach	Results
ChevronTexaco	Reduce operating costs, improve operational excellence, improve safety	CoPs, facilitate transfer of best practices, People finder	• Two billion dollar reduction in annual operating costs (1991 v. 1998) • $670 million came from refining best practices. • **Total investment of more than $2 million (total figure unknown)**

Dow Chemical	Provide faster access to information, improve information management, improve sales leads	Content management, communities of practice	• Increase number of sales leads • Increase in new product sales • Improved customer satisfaction scores • **CM investment of over $3 million for start up, $8 million annually.**
GE Plastics	Decrease customer service costs	Customer portal, customer knowledge repository	• Number of test chips created decreased from 4.2 to 2.7 • Average reduction of 4.5 hours per color match • Savings of $2.25 million per year • **Total investment unknown**
Shell	• Create a single, global company • Reduce cycle time • "Too Fast to Follow"	• Global Networks (CoPs) • New ways of working • Letting the new guys into "Old Boy" networks • Transfer of best practices	• $200 million/yr cost savings • Reduced number of wells • Increased facility uptime • Reduced design and planning errors • **Total investment of approximately $4 million**
BP	***Know-how:*** A brand attribute; ability to innovate and execute faster and smarter than competitors	Networks, Peer Assist, AARs, Retrospects, Technology VP support, Operations Value Process	• $260 million cost savings/yr cost savings • Reduced number of wells • Increased facility uptime • Reduced design and planning errors • **Total investment unknown**
Schlumberger	Knowledge in the hands of employees and customers	CoPs, InTouch KM system, intranet, extranet, content management	• $200 million cost savings • 95% reduction in time to resolve technical queries • 75%reduction in updating modifications • **Total investment of approximately $20 million**

Cap Gemini Ernst & Young	Faster revenue growth, lower costs	CoPs, central KM managers, content management	Ten-fold increase in revenue with only **five-fold increase** in employees
IBM Global Services	Revenue growth, industry leadership	COPs, knowledge managers, Intellectual Capital Management System	• 400 percent increase in service revenue • Time savings of $24 million in 1997 • **Approximately $750K to start up, $750K annually to maintain**
Best Buy	Bring creative new solutions to market faster, shorten the learning curve, lower costs	Portal (RetailZone), Employee Toolkit, Communities of Practice (retail and services)	• 1.5 percent increase in gross margin • Sold 4.2 units/store/day more in pilot stores • 3 percent drop in damage claims • Paper reduction savings of $250K/yr • **Total investment of approximately $3.5 million**

Data gleaned from APQC's "Successfully Implementing KM" (1999)", "Managing Content and Knowledge" (2001), and "Retaining Valuable Knowledge" (2002) benchmarking studies.

Measures should help you manage the implementation of your KM initiative.

There are several commonly used measurement types that organizations have implemented to gauge the success of their KM implementations. What are they and how do you create them? Leading measures show feedback about how KM implementation is going. These allow managers to monitor activities while there is time to adapt or change the situation. These include inputs to a system, activity within a community of practice, benchmarking information from other organizations, and success stories. These can result in metrics such as number of best practices shared, number of people with knowledge sharing as an objective, or number of Web site users. Lagging measures are the target and show, in retrospect, how implementation has affected the business. These are output and outcome measures that show things like number of sales won, productivity improvements, time savings, or revenue gains.

Because KM is an enabler for other business processes, you should start developing measures by gaining a clear understanding of the critical success factors for the area of business being supported by KM. Pull together a cross-functional team that represents the business area(s) you are trying to support with knowledge sharing and reuse. Have the team identify critical pain areas or areas of strategic business focus as starting points. Then, using critical success factors such as cost, quality, or cycle time as starting points, discover what makes that process work (or not) so you can measure changes. Next, identify two to three input or activity measures that will help you determine whether or not knowledge sharing is impacting that process. Think about number of best practices shared, number of unique hits on a knowledge base, or number of unique users as starting measures and customize to your own business situation. Then, identify two to three output or outcome measures that show what the goals of knowledge sharing within that business process are. Remember to keep the end in mind and constantly ask yourself,

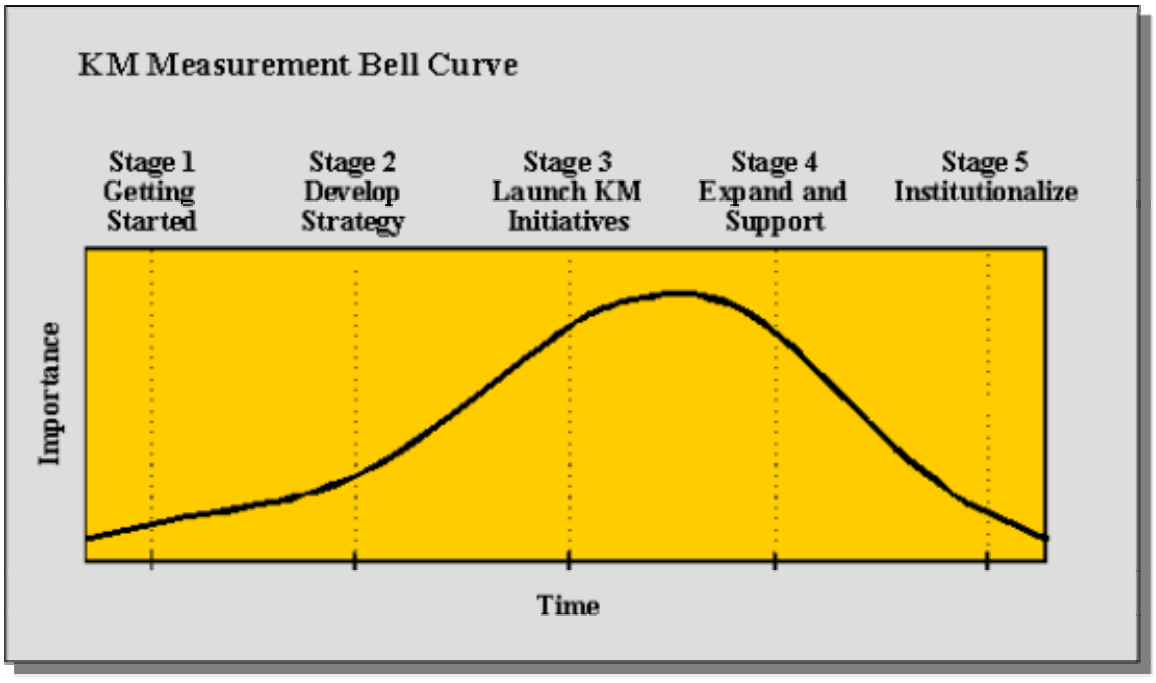
"What are we trying to accomplish?" Are you trying to sell more? Are you trying to provide more complete solutions? Are you attempting to decrease the amount of time spent preparing proposals?

After identifying your leading and lagging measures, work with the process owners to ensure that your measures hit the mark with what they are trying to accomplish. Before moving ahead, test the measures with several end users for a reality check. Measures should be simple, easy to understand, and focus peoples' energy where you want it-improving business processes.

Finally, ensure that you can actually track your measures in an efficient, effective manner. If it costs you more to measure the results of knowledge sharing than you would gain, it is not worth it. Try to tap into any current measurement sources possible-ERP systems, database queries, dashboards, or the balanced scorecard are all places to start. Remember that you need to be able to measure the current state (or baseline) of the process before applying knowledge-sharing processes. This will help you gain a clear picture of how things work today so that tomorrow you will know what you accomplished.

Measures help to change behavior

As any internal process consultant can tell you (or any rank-and-file employee, for that matter), new business processes require behavior change. In the early days of KM, many organizations failed to realize that building a great technology tool was not going to automatically make employees change their behavior. However, now that Internet, e-mail, ERP and CRM systems, business process redesign, and strategic planning have made their way through countless organizations, management has begun to realize the importance of human behavior on making business process changes. Measures can help to drive this behavior change by focusing employees' efforts on specific goals. This bell curve diagram below from the Jan 2001 issue of KM Magazine (based on APQC best-practice research) shows that the importance of explicit KM activity measures over the five Stages of ImplementationTM increases as knowledge activity ramps up.



Over time, organizations should diminish their dependence on KM activity measures as people become more accustomed to sharing knowledge (Institutionalization). As people learn to work in a new way,

measures should focus more on business results and less on knowledge sharing activity, i.e., output and outcomes are more important.

Because people will manage their time and resources to hit defined goals, it is vital that you choose the right measures. Three to five measures should be the most you attempt to roll out because employees have a finite capacity to manage time and effort. Einstein said he could manage no more than seven variables at a time, so keeping the number of measures underneath that benchmark probably makes sense!

KM measures should act as a dashboard to help you understand where to make changes in your KM implementation. Very few organizations get everything right the first time they roll out a KM program. Appropriate measures will help you manage the implementation to see where you should adapt, improve, or change. Likewise, all managers and employees like to have a goal in mind when they begin, so your measures should help you understand when and where you have been successful at bolstering the business you're in. So, as you begin your journey (or continue the journey already begun), consider how you are measuring the success of your KM initiative. Remember to focus measures and KM on critical business issues, identify several leading and lagging indicators, measure current state performance, test your scheme with people who will be affected, and use the results to help guide implementation and identify key milestones.