

Knowledge Management and Organizational Operations

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Abstract

Since the start of 2001, American companies have laid off over 3.5 million workers. The dilemma facing companies is that when someone leaves or is laid off, it is, in effect, a disposal of assets. In addition to this, the Bureau of Labor and Statistics estimates 19 percent of baby boomers currently working are expected to retire by 2008, leaving one to envision potential problems (Horgan 2003). Also to be considered is the continuing transformation of corporate society from manufacturing operations to service operations. This fact can be demonstrated by a study conducted by the Brookings Institute that shows in 1978 approximately 80 percent of a firm's value was associated by tangible assets. By 1998, however, approximately 70 percent of a firm's value was associated with intangible assets (Sullivan 2003).

The purpose of this paper is to analyze and discuss traditional and new KM theories. The paper will also look at relevant case studies of companies that have successfully implemented KM systems and processes and the positive affects of KM.

Introduction

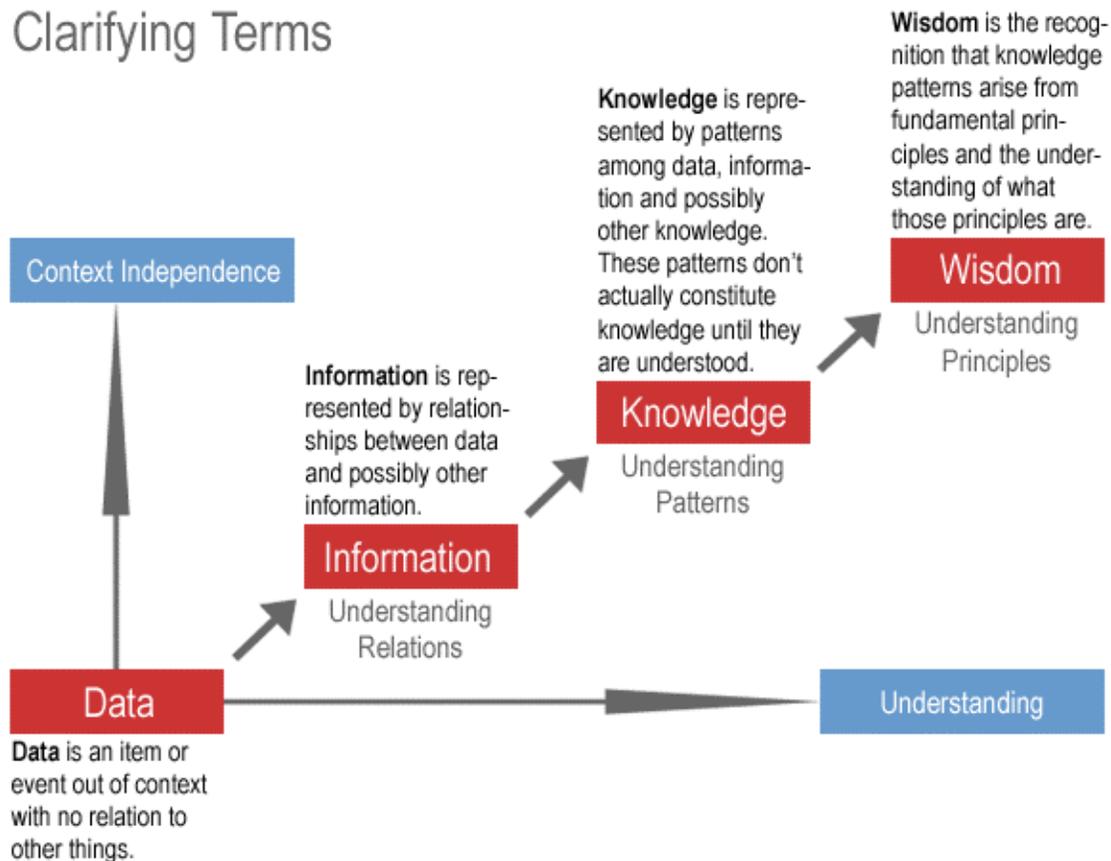
Current economic estimates place the ratio of intangible to tangible assets, arrived at independently of the values placed on these assets by capital markets, to be four-to-one in favor of intangible assets (Baruch 2000). Knowledge management has risen to the attention of many senior managers as one possible solution to the increasing problem of successfully, and profitably, managing a company's intellectual assets.

Knowledge management is "the art or science of collecting organizational data and, by recognizing and understanding relationships and patterns, turning it into usable, accessible information and valuable knowledge" (Loshin 2001). What is the knowledge

that organizations need to be looking for? What should be important to organizations is the knowledge that can further that organization's goals. The idea behind knowledge management are practices and systems that are put in place to collect answers that workers need and make them as accessible as possible.

Knowledge management is not simply a database, although it may rely on databases to store data. Nor are disparate items of information knowledge management, although managing and manipulating items of information are certainly a part of knowledge management. Knowledge management takes data, transforms it into information, and places it at the disposal of workers with the hope that they will use that knowledge to make wise decisions.

Clarifying Terms



Adapted from Knowledge Management, by Gene Bellinger of Seattle-based consultancy OutSights Inc.

Figure 1 Source: Computerworld (Loshin 2001)

Knowledge management is quickly becoming a vogue business term because organizations are hoping that it will help them combat a very real business problem: knowledge workers appreciate over time while knowledge itself depreciates over time. Since the value of knowledge erodes over time, the content of a knowledge management program should be constantly updated, amended, and deleted. Also, given that the relevance of knowledge at any given time changes, there is no endpoint to a knowledge management program (CIO Magazine Executive Magazine 2002).

Introduction to Knowledge Management

In its base form, knowledge management is the “practice of harnessing and exploiting intellectual capital to gain competitive advantage and customer commitment through efficiency, innovation, and faster and more efficient decision making” (Barth 2002). Knowledge management is a new way of looking at the world of business, a theory where who and what you know are really assets of the organization. What do these knowledge assets include? Transactional data, research, patents, trademarks, marketing strategies, business plans, competitive insights and intelligence, every email, Word document, spreadsheet, and fax that winds its way through an organization.

By some estimates, as much as 90 percent of the real value of an organization’s intellectual capital is in the minds of its workers (Barth 2002). The skills, experience, insight, intuition, and trust they have earned are known as tacit knowledge. “Tacit means silent. We all know things that we [cannot] put into words, we know things we [do not] even know we know” (Felton, et. al. 2003). Explicit knowledge on the other hand, can be recorded, archived, and protected by the organizations that ‘own’ it. It can also be processed quickly by information systems. Regardless of the makeup of an organization’s knowledge, it matters less how knowledge is defined than how you

practice its management. In the end, knowledge or knowledge management means nothing if it is not turned into customer value. If you do not know *why* you are investing in knowledge management, you should not be attempting it.

Knowledge management programs should not start by defining the type and breadth of knowledge that should be captured and managed. Rather, a new knowledge management program should start with defining the business problem, or problems, you hope to solve with knowledge management. The central goal of the program should be to help employees sift through ‘the stuff’ in order to find the knowledge that is relevant to them. These knowledge assets may be: research data, collected best practices or other tacit knowledge, or access to expertise (Schneble 2003).

An effective knowledge management program should help a company do one or more of the following (CIO Magazine Executive Magazine 2002): (1) foster innovation by encouraging the free flow of ideas; (2) improve customer service by streamlining response time; (3) boost revenues by getting products and services to market faster; (4) enhance employee retention rates by recognizing the value of employees’ knowledge and rewarding them for it; (5) or streamlining operations and reducing costs by eliminating redundant or unnecessary processes. What makes these five ideals so valuable to organizations is that they help them act effectively. “Effective behavior is vital. Sustained success and viability require effective execution of internal functions and interactions with [the business] environment—i.e. effective behavior. When individuals act effectively within an effective framework, then [the] enterprise can act effectively—operationally, tactically, strategically, and in support of markets” (Wiig 1999).

The effective availability and application of good knowledge within almost every organization (or lack thereof) has a dramatic impact on several factors. The degree to which work at all levels supports the implementation of the organization's strategy and direction depends on good knowledge as does the degree to which innovations occur, are captured, communicated, and applied. Also depending on good knowledge is the effectiveness of enterprise systems, procedures, and policies, as does the degree to which undesirable or dysfunctional behaviors, both personal and systematic, are controlled and corrected (Wiig 1999). It is vital that a broad and systematic knowledge management system be put in place to support an organization's activities and to ensure future viability.

Significant correlation can be found between the Balanced Scorecard approach to organizational management and knowledge management programs. There are four general areas of strategic management activities that actively support the four areas the Balanced Scorecard focuses upon. The key to strategic success, and the foundation for the future, is learning and growth, which is fostered by a solid knowledge management program. Organizational learning leads to business process improvement, which may range from small to wide-scale changes, the elimination of steps in processes, to the introduction of automation and technology. The goal of the improvements made to business processes is improved customer satisfaction. Customer loyalty can no longer be taken for granted: an organization's competition is too close at hand. Finally, improved financial performance is the end to all of the means, all of which were based on proactive knowledge management (Balanced Scorecard Institute 2002).

One objective of knowledge management is to leverage the best available knowledge and other intellectual capital assets to make people act as effectively as

possible. Operational benefits that are made possible by knowledge management give employees access to, and the ability to apply, better knowledge at points-of-action to achieve several benefits: (1) educating employees in the principles of their work (scripts, schemata, and abstract mental models); (2) providing knowledge workers with aids to complement their own knowledge; and (3) the training of knowledge workers to 'operationalize' requirements of the practical solutions they deal with. These changes can be expected to lead to lower operating costs caused by fewer mistakes, faster work, less need for hand-offs, ability to compensate for unexpected variations in the work tasks, and improved innovation (Wiig 1999).

Case Studies

There are several case studies available for analysis where organizations have successfully implemented knowledge management programs and achieved positive operational and financial results. London-based BP Amoco PLC and Dearborn, Michigan-based Ford Motor Co. have both saved more than \$600 million over the past three years by implementing knowledge management programs. BP Amoco, for example, saved \$50 million in drilling costs at the Schiehallion oil field off the coast of Scotland by leveraging knowledge it had gained from developing prior oil fields (Ambrosio 2000). The organizations that will be presented here include: Cisco, Dell, Northrop Grumman, and Sun Microsystems.

Cisco Case Study (Schneble 2002)

Top management at Cisco realized their organization needed a way to capture and share the expertise of its more experienced service and support managers (SSMs) to improve customer satisfaction. The need for quick and easy access to information was vital to Cisco's ongoing success.

Historically, Cisco ran a significant amount of its internal operations on its corporate intranet. Most of this information was critical for customer support. Fast access to this information would help reduce the training time necessary to bring new SSMS to proficiency in Cisco's fast-paced work environment. Management realized that they needed to leverage the expertise of its experienced SSMS by capturing and sharing their knowledge. The new initiative had three key objectives: (1) to minimize the time-to-proficiency; (2) to maximize performance and the sharing of knowledge assets; and (3) to foster ongoing learning and communication.

To accomplish these objectives, Cisco implemented VisionCor's Integrated Knowledge Architecture. This program provided a guide for organizing information, learning, and knowledge into smaller pieces called knowledge objects and building meaningful relationships between those objects. As a result, the end-user can locate the critical information needed to improve productivity and performance more quickly and easily.

The results of the program: everything is now in one place and can be found when needed without having to wait for an email reply, walk around looking for someone, or searing through gigabytes of information on the intranet. To facilitate ongoing corporate knowledge sharing and learning, workers can now post lessons learned on the site so that colleagues can rapidly learn from other's experiences after successfully working through difficult situations. These results lead to a knowledge-on-demand program that improves customer satisfaction, which, in turn affects the bottom line of the organizations.

Dell Case Study (Sviokla 2001)

From 1989 to 1998, Dell was able to move their working capital from a positive 70 days to a negative 11 days. Knowledge of every part of its value chain is what allowed Dell to make this dramatic shift: configuration, customer demand, part availability, and supplier quality. More importantly, Dell chose to share all of this information with its suppliers and customers. For example, when Dell passes knowledge to its monitor suppliers, they can bump up production of smaller monitors based on the percentage of first-time computer buyers who visit Dell's Web site.

Dell provides its customers with the information necessary to make an online purchase comfortable. This information gives them the sense that they understand what they are getting and how they will use it before they have ever seen the product. By doing this, Dell has built customer service into the front end of the selling process through knowledge management. Dell's customers are actually *presatisfied* when they receive their computer and open the box, making that process anticlimactic.

This program of sharing knowledge with the end consumer, combined with their commitment to sharing knowledge with their suppliers, allows Dell to take a customized order on the Web or by phone, transmit that information to their suppliers, who then make and assemble the various parts of the computer. The complete knowledge picture that Dell passes on to its partners about the desired computer, service needs, delivery statistics, and customer specifics turbo charges the supply chain. Dell's knowledge management program also allows them to operate on fewer asserts, collect their cash faster, and operate with less volatility.

Northrop Grumman Case Study (Santodus 2001)

As the B-2 Stealth Bomber program began winding down, and Northrop Grumman Air Combat Systems (ACS) engineers with 20 or so years of experience were

leaving, ACS established a knowledge management team to identify experts in various subject matter and to capture the content of their brains. The reason for starting a knowledge management program: ACS realized it was in danger of losing the expertise it needed to support and maintain the complex machine that would be flying for years to come, even though the aircraft was nearing the end of its production cycle.

After identifying 200 subject matter experts the knowledge management team turned its attention to the capture of knowledge. Historically, employees maintained knowledge in their own files. There was no central repository where lessons learned could be shared or accessed by employees who were not personally involved in the project. The team wanted to be very careful that the expertise collected in the centralized systems would not only be useful, but that it would be used. The knowledge management team integrated the system into the workflow of engineers by scheduling weekly meetings to discuss unresolved issues. Before an engineer could give a briefing on an outstanding issue, they must first input data into the knowledge management system. Once engineers resolve an issue, it automatically becomes a lesson learned that becomes available to all employees.

While the knowledge management team is still attempting to build a business case for knowledge management by showing a positive return on investment, ACS continues to invest in knowledge management programs. The existing knowledge management system is now viewed as, not only a way to retain knowledge, but also to increase organizational innovation and speed customer responsiveness.

Sun Microsystems Case Study (Manasco 1997)

Sun Microsystems generates approximately 90 percent of its revenues from products that are less than one year old. The company has consistently experienced

widening product lines and shorter life cycles. These facts led to a situation where Sun could not train its sales professionals fast, or effectively, enough to keep up with the ever-changing product mix. When Sun would bring their sales force to headquarters for training it cost the company, on average, \$2,225 per week per individual for training—and this cost does not reflect the cost to the company for the lost sales time.

Sun uses its intranet, named SunWEB, to link its 20,000-plus employees worldwide with a special section named SunTAN (for training access network) as an intranet-based knowledge and training system. The SunTAN system consolidates sales training information, sales support resources, product updates and materials, competitive intelligence, and an array of additional content on SunWEB.

The benefit to Sun and their sales force is that in the new era of distance learning, you no longer have to retain all of the knowledge about the organization's products. The only knowledge that needs to be retained is the location of where you can get the information right when you need it. Because Sun operates in a space that changes incredibly rapidly there is no need to retain detailed product information. It becomes a pull distribution model rather than a push model.

The payback to Sun lies in SunTAN's potential to dramatically enhance the effectiveness of sales people, which cuts traditional training costs. If, for example, Sun is able to reduce the number of annual training trips their sales force has to make by one through the use of SunTAN, they would realize a tangible savings of over \$7 million annually. Sun also claims to be saving \$25 million a year on distribution of documentation through the SunTAN system alone. This figure only accounts for five percent of its total spending on documents.

Introduction to 'New' Knowledge Management

A universal criticism of 'traditional' knowledge management is that it does not deal with the problem of how knowledge is created. If knowledge management is to have a future, it must provide answers to not only to this problem, but also to other questions such as what is knowledge, what is knowledge management, and what roles do learning and knowledge play in business performance? What is being termed the 'new' knowledge management makes a distinction between knowledge management, knowledge processing, and business performance (Firestone, et. al. n.d.).

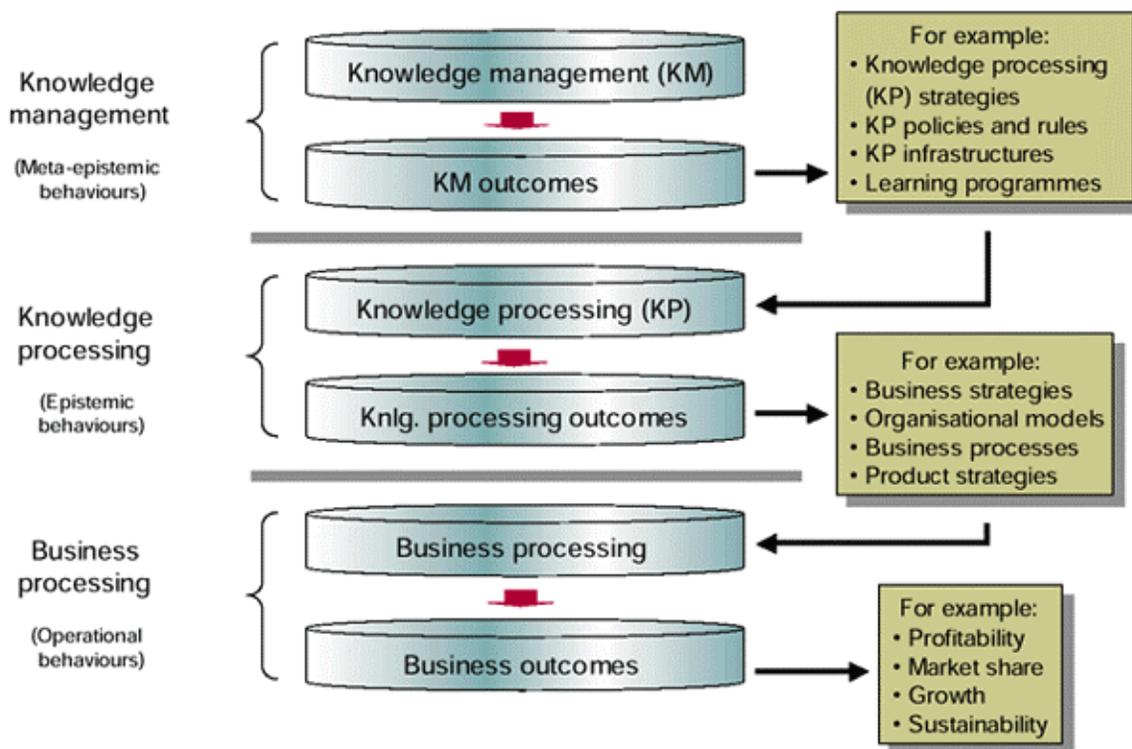


Figure 2 Source: Knowledge Management Consortium International (Firestone, et. al. n.d.)

Conventional knowledge management begins with the assumption that valuable knowledge already exists within an organization. The purpose of the knowledge management program, then, is to get the right information to the right people at the right time. The new knowledge management focuses on the whole of knowledge processing, both knowledge integration (including sharing) and knowledge production. The goal of

knowledge management should be to achieve and maintain 'sustainable innovation' in knowledge processing, which will then filter down through business outcomes. Business strategies come and go, but in order to survive over the long term, the capacity of an organization to learn and adapt must be high and sustainable. This 'sustainable innovation' should be the fundamental strategy of every organization wishing to survive (Firestone, et. al. n.d.).

"Managing knowledge has nothing to do with building computer-based repositories of facts and figures...rather, knowledge is the product of natural innovation schemes inherent to all living systems...creat[ing] the conditions in which innovation thrives...and the evolution of new knowledge will naturally follow" (McElroy 2000). Much of current thinking on knowledge management is really yesterday's technologies renamed. Among changes now taking place in knowledge management practices is the shift from strategies that stress dissemination and imitation to those that promote education and innovation.

First generation knowledge management programs are solely devoted to enhancing the performance of day-to-day business processes. They are a management discipline that focuses on knowledge operations and use. Unfortunately, it sidesteps the question of where organizational knowledge comes from to begin with and how knowledge is created. Second generation knowledge management is a strategy for organizational knowledge creation and learning.

Another significant difference between first and second generation knowledge management is the shift from supply-side to demand-side programs. First generation programs concentrated on supplying existing knowledge throughout the organization. Second generation programs, however, focus on satisfying the organization's demand

for new knowledge. Supply-side programs focus intentionally on allowing employees to imitate best practices. Demand-side programs focus instead on “creating and maintaining the conditions required for optimum production of new knowledge” (McElroy 2000). It is important to practice a balanced approach between both supply and demand of knowledge. It is vitally important for there to be a healthy production of new knowledge and its effective distribution and use throughout the organization as part of the knowledge life cycle.

Conclusion

Today, businesses are not concerned with products or information: businesses are about knowledge; and knowledge is forever changing. Both first- and second-generation (or new) knowledge management programs are rapidly emerging as a way to allow organizations to gain a sustainable competitive advantage by leveraging their knowledge assets. There are several principles of knowledge management that organizations should be aware of (Davenport 1998).

Organizations should understand that knowledge management is expensive. Take, for example, the fact that Buckman Laboratories spends seven percent of its annual revenues on knowledge management programs and McKinsey and Company has an objective to spend ten percent of its annual revenues on developing and managing intellectual capital. When weighing the cost of knowledge management programs, organizations should ask themselves how much it costs to forget what key employees know, not to be able to answer customer questions quickly or at all, or to make poor decisions based on bad information?

Knowledge management is highly political. A successful program requires a highly placed champion with the authority to broker deals between those who have

knowledge and those who use it. It is also only the beginning and never really ends: it is an ongoing process and journey. The knowledge management cycle begins with an organization where the culture growth through learning is encouraged and rewarded. This causes a steady stream of new ideas to arise from employees at every level of the organization.

These new ideas lead to improved business processes, which in turn leads to improved products and services. Finally, the improved products and services lead to improved customer satisfaction and loyalty and increased market share, which directly affect the bottom line. The enormous contribution of knowledge management to business value will only continue to grow and the activities that create value from knowledge will continue to be vital to an organization's success.

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