

# Successful Knowledge Management: Does It Exist?

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## Introduction

During the last decade, the notion of active and successful management of “knowledge” – knowledge management (KM) – has become a new business imperative. Many herald KM as the business salvation that will lead to competitive leadership, success, and sustained viability in the post-industrial era. However, the situation is not simple. KM has become a supply push solution rather than a demand pull choice. Suppliers eagerly pursue KM sales that, if we are to believe recent forecast reports by Lazard Frères and others, may exceed \$13 billion in 1999 and approach \$60 billion in 2003.

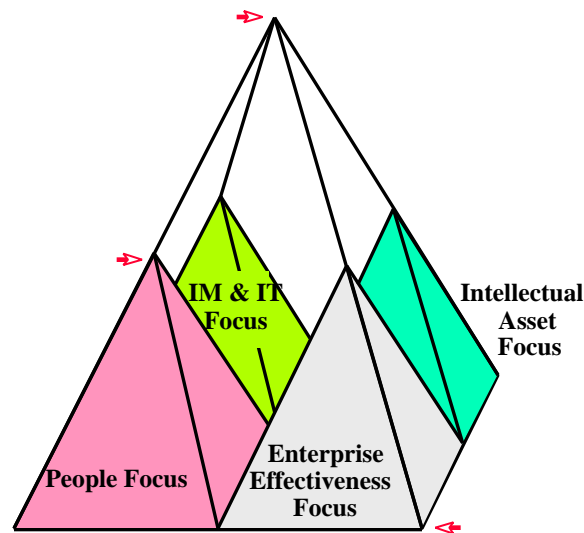
With the hype generated by suppliers and the complexity of assessing results, business leaders rightfully harbor considerable skepticisms. Before pursuing KM vigorously they would like to learn more about the realities, potentials, and downside risks. They realize that profit motives may drive proposals for million-dollar contracts by eager suppliers who still are in early learning stages or only have changed the title of their offerings from “information management” to “knowledge management.” KM proponents (this writer included) often enthusiastically explore and promote new and promising KM approaches but may have limited or self-serving perspectives. In total, it may be difficult to obtain a clear picture and it does not help business leaders that KM practitioners pursue and emphasize assorted KM approaches, often intertwined with other changes, and frequently with results that are difficult – or even impossible – to verify.

## Different Approaches to Knowledge Management

In this chaotic environment, it may be helpful to view how KM is pursued by different organizations. A few advanced enterprises pursue a central strategic thrust with four tactical foci as indicated in Figure 1. However, most tailor KM practices to their needs with narrower perspectives while still reporting considerable benefits. Of these, some have a “people-focus” to share knowledge between individuals and to build elaborate educational and knowledge distribution capabilities. Some emphasize an “information management and technology focus” to use IT to capture, manipulate, locate, and distribute knowledge – or quite often only information. Others have an “enterprise effectiveness focus” to utilize knowledge in any applicable way to improve the enterprise’s operational and overall effectiveness. Still others pursue an “intellectual asset focus” to build and exploit intellectual capital (IC) to enhance the enterprise’s performance and economic value. A few

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exceptional enterprises have created “knowledge-vigilant” environments to focus constant, widespread attention on ensuring competitive intellectual capital to sustain long-term success and viability. Their premise is that competitive IC, properly utilized and exploited, is the central resource behind the effective behavior their people – and the whole organization – need to engage in to enjoy sustained viable performance.



**Figure 1. Comprehensive Knowledge Management Strategy Focus Areas.**

The intent of KM is to manage knowledge practically and effectively to reach broad operational, tactical, and strategic objectives – and for most, the benefits are significant. However, with the different perspectives and opinions in the field, considerable confusion exists about what “knowledge” is and how “it” should be managed.

The ability to manipulate, monitor, and judge how knowledge and knowledge-related activities affect business performance, people, culture, and other enterprise and environmental factors requires crystal-clear understanding of what is meant by “knowledge” and how it affects delivery of quality work. For example, we must distinguish clearly between what is meant by knowledge and information. Most people think of knowledge as a recipe – a defined procedure – to deal with concrete, routine situations. However, few situations are repeated, most are novel. Hence, to deliver desired quality results, knowledge possessed by people must provide the understanding (or knowledge embedded in technology or other carriers must provide capabilities) that can be used to generate appropriate ways of handling different situations and permit anticipation of implications and judgment of effects.

## Chaparral Steel

Given the uncertainties and contentions around KM and its potentials, it is appropriate to provide an example of comprehensive KM. Of all companies that achieve considerable benefits from KM, one stands out for several reasons. Chaparral, a steel minimill in Texas, has practiced systematic and comprehensive KM since its inception in 1975 – for 24 years. Chaparral's senior managers who conceived the management approach, do not think of it as KM, only as the most effective and appropriate approach to secure sustained exceptional performance. Their business results, which they attribute to their knowledge- and people-centric approach, validate their beliefs. Their success is exceptional and it is important to consider some of the salient characteristics of their approach:

### Management Philosophy

- Chaparral's management pursues the “hologram” philosophy where each employee is a replica of the whole and understands management's visions and the company's full business situation. That allows each employee to make independent decisions that become part of implementing corporate strategy while taking into account broad business implications.
- The management recognizes that people are “incredibly smart and innovative” when: 1. Given the opportunity to perform; 2. Having sufficient general knowledge; and 3. Being provided with detailed up-to-date information on the plant's and company's performance – in absolute numbers and relative to competitors.
- The management believes that their employees must be better educated and have a better understanding of the technical and business aspects of operations than competitors. That is the basis for distributing decision making and encouraging individuals to act on their own.
- Collaboration is essential and must be reinforced. Hence, employees should not be judged on their individual performance. Instead, they should be judged on the performance of the whole team and how well that operates.

### Management Decisions

- Decisions are delegated to the point-of-use to permit each operator to act immediately.
- Chaparral's employees are salaried and divided into teams. Team leaders are rotated every few months.
- There are no individual department bonuses. Twice yearly profit sharing is distributed to all based on the total company's performance.
- There are no production quotas – only a stated desire to produce as much as possible at the highest quality required by the present market.
- Operations are closely integrated to break down barriers between departments.

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- Continuous casting and mill operations report to the same general manager to strengthen integration.
- Operating personnel are divided into operators and senior operators. All operators (including those with degrees) go through multi-year program to become senior operators.
- Senior operators with exceptional expertise are given opportunity to teach full time for a year or two (with no change in salary) and then rotated back to operations.
- “Everyone participates in research.” Chaparral has no separate R&D function but is still performing extensive R&D. Senior operators and engineers collaborate on research and development of new operations methods, new designs, etc. If a team wishes to experiment with different operating conditions to test improvements, and this may reduce efficiency or throughput, it will be tolerated (up to a point).
- Chaparral does not have a maintenance department *per se*. Operators are expected to diagnose, troubleshoot, and repair the equipment. Specialized maintenance people with special knowledge in electronics, computers, etc., are part of operations.
- Chaparral’s plants are controlled by sophisticated process computers to reduce dependence on personnel for routine work and support uniformity of operations.

## Knowledge-Related Actions and Practices

- All employees are provided with knowledge to allow them to act intelligently and quickly.
- Deliberate educational and knowledge distribution efforts ascertain that employees have access to the best possible knowledge available to handle situations.
- Chaparral uses outside experts whenever possible and frequently surveys world-wide what others do. NIH (“Not Invented Here”) syndromes are not prevalent. “We are not large enough to have in-house experts in most of the areas where we need expertise.”
- Information on operating and technical performance is shared widely. Competitively sensitive information is controlled but technical and operating information is made available to everyone. Operators know what they made and what other departments made yesterday, last week, and last month. The performance of operations and potentials for improving performance (quality, throughput, energy consumption, etc.) are constant topics for discussion among operators at all levels (even over beers after work).
- Much effort is expended to make operators and managers of one part of the process understand the effect of their decisions on upstream and downstream operations.
- Chaparral places extensive emphasis on education. They provide education for high school equivalency for those without diploma. Education is provided for all

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in metallurgy, steel chemistry, metals processing, control, electronics, and other relevant technical areas. Employees are also educated in basic business principles, customer requirements, people skills, team-work, and other subjects.

- All collaborate to improve operations, develop new operating practices, and create new technology.
- Chaparral is constantly working to codify the nature of steel making to remove pervasive “myths and alchemy”. As new understanding is obtained, it is incorporated into their computer control system which is quite sophisticated.

## Resulting Behavioral and Cultural Traits

- Individuals are not afraid to ask others for inputs and expertise – Chaparral maintains a “safe environment.”
- Peer pressure is very important. Example: At shift change, relieving team members will come in early to relieve specific individuals on the departing team. If one team member does not show, his/her opposite number will stay over -- at no overtime payment (there are no timeclocks) or compensation. Repeated absenteeism quickly results in request for dismissals by peers.
- Management is careful to not blame individuals. Operating problems are examined to find what can be learned -- if it is technical or human. If technical, solutions are sought and corrections implemented. If human, management explores how it can change the situation through its own behavior, education, staffing, or perhaps by changing the operation itself.
- There is a strong feeling by each team that they “own” their production equipment and the teams are eager to keep their equipment in top condition. They are responsible for its condition and operating performance and share that responsibility with the other shifts.

## Business Results

- Chaparral is able to produce higher quality steel at lower costs than its competitors and is a preferred supplier.
- A few years ago, Chaparral used less than 83 minutes to produce rolled steel from raw scrap metal to finished product. It took 56 minutes to charge and melt a batch of steel (industry average was 3 hours) and 27 minutes to cast and roll it including the furnace time to equalize billet temperature.
- The energy required to produce a ton of finished steel (for the whole process to press, roll, cool, straighten, cut, and bundle) was much less than industry average since the only heat added after melting was for equalizing.
- Many of the major equipment items are of Chaparral’s own patented designs and have superior operating characteristics.
- Chaparral’s plants are operated with fewer operators than their competitors’.

It may be clear from these characteristics that Chaparral’s approach to create an effective organization consists of a comprehensive integration of a number of factors. They have created a knowledge vigilant approach and culture and have

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implemented management and operational practices to take full advantage of these assets.

Chaparral's management considers that their operations now are in "Stage 1" where operations are quite well integrated but separated from business decisions on a second-to-second basis. They look forward to Stage 2 where operations will be closely tied to business information in real time. Later they envision Stage 3 where they can implement technologies such as artificial intelligence to automate more of the operational decision making once sensing problems are solved and sufficient operational understanding is obtained.

Based on the success with its knowledge- and people-centric approach, Chaparral is presently migrating its management philosophy and practices to its parent, Texas Industries, Inc. This work has been underway for over one year and is expected to take several more years to complete.

### Concluding Perspectives

Many organizations other than Chaparral have implemented advanced KM practices and have reaped significant benefits from these endeavors. As their experiences become better known, we can expect that the present uncertainties about KM will be cleared up and it will be easier for business leaders to identify why and how to approach KM.

However, much needs to be done. We do not understand much about knowledge. Our understanding of human cognition in decision making and knowledge-intensive work is marginal. There is not an accepted economic "theory of knowledge" that is applicable to business. We do not have a general understanding of how to undertake comprehensive and systematic KM within an organization and may need a new theory of the firm to manage knowledge effectively – and to link it with enterprise strategy, tactics, and daily operations.

We are learning to adopt greater people-centric perspectives of knowledge. To be viable, we need constant learning – led by constant innovation. Technology by itself only goes so far and can only provide us with rudimentary reasoning devoid of innovation. People are the intelligent agents that make organizations function. People create new opportunities and act on them. However, we need to provide these same people with opportunities, permission, motivation, and knowledge – and that is why KM is so important!

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