
Managing Knowledge The Chevron Way

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Of all the initiatives we've undertaken at Chevron during the 1990s, few have been as important or as rewarding as our efforts to build a learning organization by sharing and managing knowledge throughout our company. In fact, I believe this priority was one of the keys to reducing our operating costs by more than \$2 billion per year - from about \$9.4 billion to \$7.4 billion - over the last seven years.

Oil prices - adjusted for inflation - are now at their lowest levels since Woodrow Wilson was in the White House. Nevertheless, the long-term forecast for the global energy business is one of growth and opportunity. So Chevron has to further reduce its operating costs and at the same time, we have to sustain an aggressive capital-investment program.

That means we have to keep finding new and better ways to do things, and we have to apply new knowledge in all areas of our business, because both of these will be even more important for us in the years ahead. Sharing knowledge is no longer merely a performance issue. Today it's a reputation issue as well. And it directly affects every major company's ability to win new business and attract and keep top employees. The fact is, finding and applying new knowledge makes everyone's work more interesting and more challenging. Because of that, it also has the potential to make people's jobs more fulfilling and more personally rewarding.

I want to talk more later about motivation. But first I'd like to reflect briefly on a speech I gave in 1995 at a forum organized by the American Productivity and Quality Center. It was my first address on "knowledge management," which I think was just as hard to define back then as it is today.

At Chevron we emphasize instead the concept of "the learning organization." And let me read some words here from my last talk that say what this means for our company: "We will create an organization that learns faster and better than competitors through benchmarking . . . through sharing and implementing best practices . . . by



learning from experience . . . and through continuous individual learning and personal growth." Those words come from "The Chevron Way," which is a guiding set of objectives, principles and values that define who we are, where we're going and how we need to interact and work with each other to get there. In one sense, "The Chevron Way" is a learning tool to communicate and reinforce our values and goals as well as our years of experience in our business for all our employees, and especially those new to Chevron. It's a reference for what's essential to success - and again, building a learning organization is one of the most important.

The other thing I wanted to retain from my 1995 talk was some of our success stories. One is energy efficiency. Our six-year effort in this area has reduced energy costs by about \$200 million a year compared to when we started. A big part of the savings has come from the systematic application - throughout our operations - of best practices for managing energy use. We track that progress through an energy-efficiency index that's based on reports from each of our business units. And we have a network of practitioners who meet and hold regular conferences and who network through E-mail, an internal web site and a newsletter.

Another success story is how we manage our major capital projects. The oil and gas industry is

very capital intensive just in 1999, we plan to invest over \$5 billion. In 1991, a benchmarking study told us we were spending more than some of our competitors on big projects. So we combined best practices and internal know-how to create the Chevron Project Development & Execution Process, which in U.S. industry today is considered to be a world-class tool.

We've since identified hundreds of millions of dollars in project-cost savings since we started tracking the results of this process - in fact, it's probably higher - and that translates into a 10 to 15 percent improvement in capital efficiency. We've continued to improve that process and we've formed a central Project Resources group to help people use this tool company-wide. They also support our community of project-management people all over the world.

The other story I've told before is the "process masters" program in our network of U.S. oil refineries. These are seven full-time experts who support Best Practice Teams covering the major, high-cost functions common to all six plants - ranging from catalytic cracking to plant maintenance. The refineries have a lot of other networks called "natural teams" - that is, employees who work in best-practice groups as part of their regular jobs. And the mix of these and the process masters program has distinguished our U.S. refining operations for the systematic sharing of both internal and external best practices.

In those three cases, the impact on business results has been both measurable and significant. And during the 1990s, these kinds of efforts have been essential to reducing our costs, to achieving a productivity gain of over 30 percent (in terms of barrels of output per employee) and to improving employee safety performance more than 50 percent. Protecting people and the environment has always been a priority, for obvious reasons - and we spell that out extensively in "The Chevron Way." But a safer workplace also boosts morale, and that pays off in productivity. Also, because incidents cost the oil industry billions of dollars each year, safety has become recognized as a financial issue as well. Every gain not only protects people and the natural world, it helps the bottom line in a very real sense.

I'd like now to give you a little better idea of the range of things we're doing at Chevron - and I hope these examples will be useful in your own pursuit of best practices. In gasoline, we're transforming a traditional area of our company by

applying new retail concepts supported by the tools of electronic commerce. We call it the Chevron Retailer Alliance, and it shows what can happen when a business starts to evolve into a true learning organization. Gasoline and convenience retailing are extremely competitive, with a rapid rate of change and innovation. You can't survive if you don't use best practices. Thirty years ago it was car washes. Now it's pump-card readers. But it's not enough to keep up. You have to use knowledge as a platform for continuous innovation. So we asked ourselves how we could get the greatest value from our network of 8,000 retail sites. Ultimately, we combined experience, creativity and ideas from all kinds of businesses and people to invent a superior way to manage brand image, gasoline supplies and convenience-store retailing. Among other things, we plan to leverage the full buying power of our network, and streamline the ordering and distribution system. Internet technology is making a lot of this possible, and tracking these on-line exchanges will give us a steady flow of new knowledge to help re-define our relationships with our retailers throughout the country.

At the other end of our business - in international oil and gas - we've been benchmarking our costs for drilling oil and gas wells internally, every year, for more than 10 years, and we started external benchmarking in 1992. We've used the data between locations - West Africa, Australia, Kazakhstan, China and the rest - to improve drilling performance around the globe. Last year's external study showed we were an industry leader on the basis of cost-per-foot drilled.

However, the most exciting new example in oil-and-gas has been our adoption of an "organizational learning systems" or "O.L.S." Basically, it provides a map for planning, execution and evaluation of on-going work. In drilling, it uses a simple software tool to capture lessons from the first wells in a new area, and then it helps you use that knowledge to drill the rest of the wells faster and cheaper. We've seen well costs drop by 12 to 20 percent and cycle time reduced as much as 40 percent in some cases - and that really adds up with big off-shore drilling vessels that cost up to \$250,000 a day. But we didn't invent the O.L.S. It came from Oil & Gas Consultants International, who developed it with Amoco and later verified a model by working with the Gas Research Institute. Chevron didn't fully appreciate the potential of the O.L.S. until after we learned more about it from a group we formed in 1996 with Mobil, BP and Texaco to share best practices in technology. That group eventually funded a special study of the

O.L.S. - and later, the group proved the value of the O.L.S. by conducting a pilot project on Chevron's oil development in Papua New Guinea. Now Chevron uses O.L.S. to manage key elements of our deep-water exploration and development in the Gulf of Mexico. And as of January first, we've added an O.L.S. specialist to our Project Resources group to help other Chevron organizations make use of this new tool.

Earlier, I mentioned best-practice sharing in our refineries. Last fall, Hurricane Georges damaged our Mississippi refinery so badly that we had to shut it down for more than two months. To keep customers supplied, we had to go out and buy replacement fuels - and that cost us a great deal of money. As crews worked to re-start the refinery, they found a blockage in a sulfur unit. Using their best-practice network, they got solid advice based on both inside and outside expertise. Within days, they had a cost-effective way to fix the problem - and they updated the unit with new technology at the same time.

The point is, if you add up all the small things we do better today because of sharing, what you get is a big impact.

Not far away, offshore in the Gulf of Mexico, another group has combined the process-masters concept from our refineries with some best practices from Union Pacific Resources to create a new program they call "technology brokers." And now six employees work full time in these new jobs, searching for best practices in offshore oil and gas operations.

This is already paying off - again - in the area of drilling. The typical oil or gas well is about as wide as a dinner plate and thousands of feet deep. Just getting in and out of the hole takes a great deal of time and money. Now we've found a one-step way to do two separate but essential operations at the bottom of the wells. What once took five days and two trips down the well now takes a day and a half and a single trip. After just 10 wells, we've logged over \$2 million in savings compared to the old method.

We used to emphasize large, in-house R&D organizations and internal invention of tools and methods. But we decided several years ago that it's more cost effective to invest less in that approach - and invest more in finding and integrating technology from a diverse set of suppliers from the larger world, particularly the networked world.

I have more Chevron stories than I can tell all at once, but I'd like to add a few more. I was very pleased, for example, when our human resources organization adapted best practices from companies like Bechtel and TRW to set up a new process to reduce conflict in disputes between individual employees and the company. Among other benefits, we hope it will help us find fair solutions before things get to the lawsuit stage. Meanwhile, in community relations, the Chevron Best Classroom Practices program has captured innovative ways to teach math, science and technology from a dozen great teachers. And we've put their lesson plans on our intranet site - www.chevron.com - so that any teacher can take advantage of them.

Also last year, we created the Chevron Environmental Management Company. Our environmental remediation work used to be done by separate groups scattered around different locations. But this new unit will share the know-how and experience of the whole company, with a goal to reduce remediation costs by at least 15 percent.

Also, I mentioned in my 1995 talk that we use in-house conferences as a knowledge-sharing tool. We still hold these, for example, to energize our project-management network and our supplier quality improvement network. Also last year, we held our first conference to exchange ideas on valuing and promoting diversity. It was a great event, and a very satisfying outgrowth of our efforts to stress the importance of diversity to our business.

In many ways, diversity is a learning-organization issue. It teaches us to seek the full range of skills, ideas and perspectives in our work force, and it helps us make sure we try to build a work force that will improve that range.

But the stand-out conference over the years has been the Chevron Chemical Quality Conference, now supported by its own intranet site. We often describe our chemical company as the birthplace of quality at Chevron, so they've set a high standard for sharing knowledge. Right now, for example, they're managing four Vision Objective Teams based on sharing best practices and promoting standard work processes in the areas of plant management, marketing, technology planning and supply-chain management.

I can't cover all those here, but our best-practices newsletter recently reported that the plant-management team had achieved a plant-reliability

level of 100 percent in 1998, compared to about 85 percent in the prior year.

One last point on events. This month, we'll hold our first conference on co-generation facilities. We operate seven of these energy plants at a cost of about \$100 million a year, so we want to take a closer look at them. But what's most important about this example is that we probably never would have thought to hold this conference if we hadn't first created our larger energy network six years ago to swap ideas on reducing energy costs. I hope those additional stories give you a better idea of the breadth of our efforts in managing knowledge. However, probably nothing we've done recently can compare to the rollout of our new Global Information Link (GIL). In 1998, we replaced every PC in the company with a common machine, software and connective system, creating a single desktop and operating environment, worldwide. This was a huge undertaking - about 30,000 computers, with full intranet capability and internet access for those who need it, advanced E-mail, scheduling and presentation tools - the whole works.

And I think it's worth mentioning here that we used our own Chevron project-management process - which I described earlier - to implement this massive change. We did it in just one year, where similar overhauls have taken as long as four years. And in addition to the networking benefits, we believe GIL is going to save us about \$40 million a year in system-management costs.

These information technology tools weren't new to us, of course. What's new is having them all standardized, compatible and connected. What's new is that now, essentially every employee has an identical - and very friendly - "sharing machine" on their desktop.

GIL has also supercharged the already rapid growth in the scope and usage of our intranet. We now have wide range of internal sites, from best practices, to environmental, to the company home page and the individual sites of the subsidiaries and departments.

Of course, employees need to have good reasons to share knowledge, so let me turn now to the issue of motivation. Obviously, the CEO has a major responsibility here. So I talk about sharing best practices when I speak to employees. I ask top people from companies like HP, Motorola and G.E. to speak at our monthly Management Committee meetings. And those meetings are also a forum for Chevron teams to tell their success

stories in using knowledge to improve operations and results.

Beyond that, I think the formula for continuous improvement is fairly simple. You need clear objectives, the opportunity to share rewards and an empowered work force.

An objective can be a financial goal, or a production target - whatever is important. In our case, providing data on the business performance of our closest competitors - and then setting a goal to do better - has been a simple but powerful tool for improving performance. People really seem to respond to the simple fact that somebody else is doing things better. Goals aren't a new concept. But they work because they give people a compelling reason to find better solutions. Recently, I challenged our project management specialists to shave an additional 10 percent off our project costs in 1999. And last month - because of oil prices - we launched a \$500 million cost-reduction plan to advance beyond the \$2 billion in savings we've already achieved in the '90s. A lot of the new gains will have to come from finding better ways to do our business.

As for sharing rewards, our Success Sharing bonus program is based partly on corporate earnings, partly on competitors' earnings and partly on safety and operating costs. The bonus can be as much as 8 percent of pay. More recently, we started giving stock options to all of our people to connect them more directly to our financial performance. Of course, sharing rewards isn't managing knowledge - it just gives everyone another good reason to do it, and I don't think you can have one without the other.

Lastly - on empowerment - again, it's not rocket science. Delegating authority helps people feel ownership for their work and give their best to the organization. Of course, this is hard to measure, but not impossible. In our annual Worldwide Employee Survey, for example, we try to track feelings of commitment to the company. The latest results show a 15 percent improvement in recent years, partly because people are feeling more empowered in their work. That's the kind of thing you want to hear, of course. But there are some related issues here that I'd like next to discuss briefly.

My talk to the APQC three years ago was titled "Managing Knowledge in a Decentralized Learning Environment." At the time, we felt that our focus on delegation, decentralization - and our shift to strategic business units - might create new barriers

to sharing. I raise this because I suspect other companies probably struggle with this same issue. Like others, we're sold on the merits of the decentralized model of management. It's really the only way you can manage a global company the size of Chevron. So we just have to work harder to make sure the right people connect and share knowledge across the geographic and organizational boundaries of our company.

Decentralized companies - especially global companies - will always be challenged to achieve uniform performance in sharing knowledge just as they are in other areas. We see this in our performance metrics, with differences of 20 to 30 percent between organizations in many key areas. Of course, the comparisons are useful. But the key is to view the differences as opportunities rather than deficiencies. Replacing less-effective ways to work with better ways is what people in a learning organization are supposed to do, and frankly, I think you gain more from encouraging those behaviors than you do by trying to correct differences in performance.

The other point about decentralized companies is that instead of one good way of working, we have dozens. Instead of one incubator for new ideas, we have hundreds. Of course, you still want to standardize the most important work processes. But at the same time, you don't want uniformity to undermine the potential for creativity. The fact is, you can have both - as long as you recognize that company structure can sometimes raise some pretty significant barriers to sharing knowledge.

Recently, we asked Jerry Moffitt - who coordinates our energy-efficiency network - to reflect on his program. Even though it has been a great success, it wasn't surprising to learn that he believes there's still some low-hanging fruit out there that we haven't taken advantage of - and I'm sure he's right. Jerry also said that we need to start stretching higher and looking harder so we can harvest the opportunities that we haven't seen yet. And after that, we're going to have to get ourselves a ladder and reach even higher.

But Jerry also said we should remember that looking for better ideas is only one of many jobs that command the attention of employees. This is a critical issue. Most of us are working in downsized situations, trying to do more with fewer resources. Still, the only way to know if we're performing at a benchmark level is to test that assumption by looking inside and outside for new solutions. This is why we're going to need our knowledge-sharing advocates to generate

enthusiasm. We're going to need the process masters and technology brokers and cross-pollinators - like Jerry - to help people embrace this priority.

There are some other basic things we can do at Chevron to make sure we keep the momentum going. We can keep working on our culture to promote individual and organizational learning, because we're convinced this can help give us a competitive advantage. After all, that's what it's all about. This is especially important for management. We need more of our leaders to model and reinforce the right cultural behaviors. And I might mention here that one way to help achieve that is to promote people who excel at learning-organization behaviors.

We can also make better use of our supplement to "The Chevron Way," which spells out specific behaviors for leading a learning organization, such as networking . . . and investing in training. We can try to emphasize learning from mistakes rather than laying blame. And to help drive out the "not-invented-here" syndrome, we can to recognize and reward people more for using best practices from the outside.

We can keep telling our story in our town-hall meetings, in company publications and through our intranet. That should stimulate more grass-roots activity, where employees with similar jobs - no matter where they work - will use our Global Information Link to take the initiative and start networking and sharing best practices. And to help make that happen, we're going to expand the availability and use of web-based tools for sharing and managing knowledge.

At the same time, we're going to keep the emphasis on the strategic and capital-intensive areas of our business like project management, energy efficiency and deep-water oil development, because that's where the biggest payoffs are waiting to be found.

I mentioned earlier the talk I gave in 1995, and one of the things I did was hold up a copy of our Chevron Best Practice Resource Map. It was kind of like a snapshot of that point in our development, showing dozens of networks such as maintenance, safety and strategic planning - all kinds of functional areas - with contact names and numbers, and how often they meet, and all color-coded according to the Baldrige categories.

The map is out of print now. It has become sort of a collector's item around the company, and in fact I

keep one on my desk, even though we've since replaced it with an on-line version that's easier to update and more easily available to employees worldwide. But I bring up the map because it was one of the first things that got Chevron noticed in the area of managing knowledge - it made us more aware of ourselves in this area. More recently, Carla O'Dell - the APQC's president, who will speak here tomorrow - was kind enough to mention our company in her new book on knowledge management. And last fall, in a study co-sponsored by the Journal of Knowledge Management, we were named one of the Top 20 "most admired knowledge enterprises."

Certainly, we're proud that others have noticed our past progress. But the real value of that recognition is that it helps make us want to remain an admired knowledge enterprise - and that's not going to be easy. Yesterday's learning curve has become today's race track, and that means building a superior learning organization is now a necessity for any company that wants to be a top competitor.