Current Issues in Technology Management

SPRING 2009
VOLUME 13, ISSUE 1

HOWE SCHOOL ALLIANCE FOR TECHNOLOGY MANAGEMENT

The Enemies Within: Overcoming Organizational Barriers to Innovation

Jeff Krull

I am tired of hearing the word innovation. The word is everywhere, particularly if you happen to work in product development. It's the new panacea, the end-all, be-all, miracle cure for corporate growth. It's the subject of countless articles and has produced a new generation of soothsayers in the consulting world. Innovation is guaranteed to turn your red ocean blue and take customers by storm. All you have to do is go out and innovate. What are you waiting for?

You've seen the commercials. The CEO pounds the table like a TV pitchman and demands "we have to be more innovative." The assembled team nod their heads in agreement. It's done, the company is assured domination within their market, perhaps the world. It's as simple as that. Of course, we all know that it isn't, and that this approach is doomed to failure. What began as an energetic call to action will wind up as the fad of the month. So what do we need to do to get "more innovation?"

At the outset, it's important to recognize that when CEO's and their like ask for "more innovation," it's not always clear what they mean. Some use the term innovation as a proxy for more revenue. To others, it invokes some high-tech playground where new technologies are tried on for size. Still others are looking for imaginative new products that take the market by storm. All of these concepts have validity, but each is very different to implement. It's therefore important to be clear from the beginning on the problem you are trying to solve.

If you take out Webster's Dictionary, you would find innovation to be defined as "the introduction of something new." Others, such as Jay Paap of MIT and Caltech, elaborate by adding the notion of bringing value to customers through the use of old or new ideas to improve the performance of old or new processes, products, or services. These simple additions are critical. The introduction of something new, just because it's 'cool,' never guarantees success. Business history is littered with products like the Ford Edsel and the Apple Newton.

As indicated above, there are several different types of innovation. Some speak of

Continued on next page

DIRECTOR'S NOTE

Two aspects of innovation are the subjects of the articles by Jeff Krull and Steven Jacobs. Krull's paper deals with the impediments to innovation in an established organization, and offers advice on how to overcome them. Jacobs treats the issues involved in creating and leading high performing innovation teams.

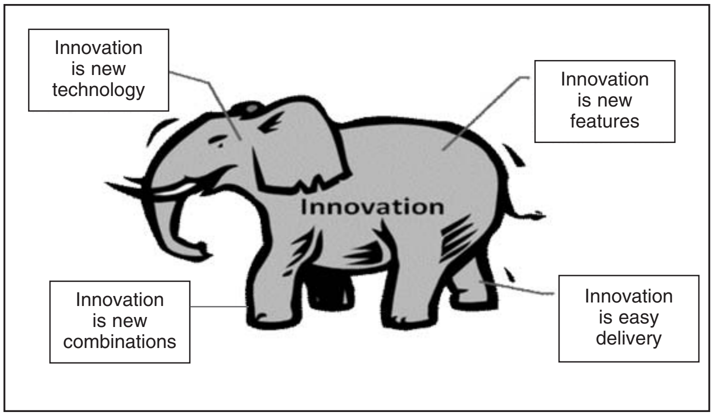
Although often invoked in the context of innovation, the concept of Customer Value is rarely considered with sufficient specificity to bring much in the way of operational value. In his article, William Feuss discusses the quantification of Customer Value, and how companies can use the methodology to better understand their competitive positions.

The 18th Annual HSATM Conference will be held on June 10, 2009, on the theme *Leading in a Changing Environment*. Details are on the back page.

Larry Gastwirt

IN THIS ISSUE......

STEVENS
Institute of Technology



breakthrough innovation. This is the innovation that changes the "rules of the game," often transforming an industry. It is typified by the original introduction of the Xerox copy machine or the digital camera. They are innovations that begin as doubtful technologies from scientists in white coats. This group could be described as the great inventions.

Another type of innovation happens as the leading performance attribute of a product becomes a commodity. Solutions to the second-order annoyances then come to the forefront and become the market driving force. This is sometimes called incremental innovation. A classic example of this is the journey of telephones from dial-driven, tethered devices to free-roaming, multimedia powerhouses. Telephones back then competed on sound quality and reliability. We gave up some of that for the freedom of wireless. In the end, this type of innovation redefines the entire customer value proposition and becomes wildly successful.

Still another view of innovation is highlighted in the book "Blue Ocean Strategy" by W. Chan Kim and Renee Maurborgne. From a customer's perspective, a product is as much about the overall experience as it is about the physical item itself. Innovation may reside in how a product is purchased or in the service received after the sale. It may be a radical simplification in how a product is positioned in the marketplace, simplifying the overall buying decision. These innovations consider the total experience package and may not have anything at all to do with "whiz bang" technology.

Do you recall the story of the blind men and the elephant, the tale of different viewpoints on the same animal? I maintain that these different types of innovation are all parts of the same beast. In the end, innovation is about harnessing creativity to produce value for the customer.

Victims of Their Own Success

Growth is good, right? You know the American dream: a passionate entrepreneur begins with a dream and no money. They hit upon a product or service that works. Sometimes it's an invention born out of their individual genius. More often they assemble ideas and pieces into new combinations. They bother their friends, families and neighbors with it. Then a funny thing begins to happen — the product sells and the fledging company begins to grow. Our entrepreneur works 18 hour days and puts love into each widget that rolls out of their garage.

That's when Frederick Taylor of scientific management fame joins the company. He takes over the HR department and work is broken down to the sub-atomic level. Our little company begins to hire people to support the mission. Departments spring up like mini-malls along the highway. Product Managers emerge that are responsible for propagating their buggy whips to the ends of time. Electronics companies hire electrical engineers; plumbing companies hire mechanical engineers, and so on. Financial professionals report on the margins of product lines. Quality people tell you how imperfect your buggy whips have become. Shortly, the laser beam focus on the customer becomes watered down through multiple levels of management, corporate board meetings and vacation time that expires soon.

Perhaps even more insidious, the language a company uses changes over time. Instead of speaking about real problems described in English, a funny sort of code language develops. All of you have experienced this. You come home from work and talk about your day with your spouse or friends. I'm referring to the words and acronyms that get the quizzical looks, followed by the guttural "huh?" "Honey, my PTPP was accepted by the SBPC, but only after we revised the output to be 120dB." Besides confusing those closest to you, this language becomes a barrier between you and innovation.

Attack of the Process Police

Along with the added bulk, new rules are put in place to manage all the activity. Large groups of people need ways of working together to avoid feelings getting hurt. Any of you that have implemented process changes have heard the power of "that's the way we've always done it." Unfortunately, processes often develop so much momentum that they become impervious to change. The sheer paperwork alone is often enough to dissuade would-be change agents.

Other company systems help enforce this behavior. Performance review systems reward individuals for the current way of doing business. Quality systems gather data on what has been done to apply to future versions of products and services. Unfortunately, the strong status quo doesn't take kindly to upstart innovative ideas. The excited "why couldn't we" is met with the stern "we've always done it this way." The strong bias toward conformity acts like an antibody killing newness.

The Language of the Status Quo — Do You Hear This at Work?

We tried that before and it never worked.
Nobody will buy that, it's junk.
Just tell me what you want me to build.
Our product goes 5 feet further, so it's better!
We make stamped metal toys, what do you mean we should make plastic wagons?
The Research group will drive innovation through the company.
We need a product like (insert your competitor here) and we need it yesterday!

I admit, as a change agent it's too easy and quite unfair to become cynical of work done by past generations. The processes and organizations you have today are what made the company successful. Still, yesterday's corporate systems were designed to solve the business problems that existed at the time they were created, and the world is constantly changing. As Charles Darwin might have said, "evolve or become extinct." It is all too easy to become a victim of your own success.

The larger a set of accepted practices becomes, the more inertia is developed behind those practices and the more difficult change and innovation become.

Chris Barlow, of the Co-Creativity Institute, tells an interesting story of the South Seas Monkey trap during his instruction on innovation and creativity. South Sea Natives found a novel way of capturing monkeys by exploiting a weakness. They would put a hole in a coconut just large enough for a monkey to squeeze its hand inside. Then they would place a morsel of tasty fish inside. The monkey would squeeze its little hand in to grasp the prize, only to find that it is unable to pull its fist through the hole. Unwilling to abandon its prize, the monkey is unable to escape through the trees and is quickly caught.

The point of the story is not to enrage the animal rights people or start a cause to outlaw the monkey trap. It is to politely point out that your company might be the monkey in this story. Companies become brainwashed and hang onto products, language and processes that are no longer relevant to customer value. Industries suffer similar fates. The larger a set of accepted practices becomes, the more inertia is developed behind those practices and the more difficult change and innovation become.

Therefore, the challenge becomes fostering innovation while the maelstrom of everyday corporate life goes on around. How can you make it systematic without having to recruit Braveheart to break down the corporate silos? Alternately, how can you ensure that the corporate antibodies won't kill your innovation before it starts?

It Doesn't Start With the Customer

Does that sound sacrilegious? The most critical aspect of an innovation system is alignment among the top brass. The entire executive team needs to understand and agree upon what they are trying to achieve with a system of innovation. Budgetary and human resources need to be allocated to innovation with the highest overall priority. I will go further with this heresy. I claim that innovation and strategic planning are really one and the same. Typical strategic planning focuses on projects intended to make the company better. The sessions begin with last year's mission statement and some form of value proposition. On the other hand, innovation is really a systematic examination of customer value from all aspects. Shouldn't customer value be the source for all corporate initiatives?

The most critical aspect of an innovation system is alignment among the top brass.

Turning your entire company on its head is a very high-stakes game. I wouldn't advocate turning over all or even most of your resources to innovation. That would be a bit like betting the farm on some unproven idea. Top management must agree upon a realistic amount of resources to set aside for innovation. I think of it as retirement savings. One rule of thumb is to put aside 10% of your resources for innovation.

Once this level is set, the key human resources among this group must be 100% dedicated to the task. Sharing with other lower priority programs is a recipe for trouble. The kind of people you choose is very important too. You're looking for those entrepreneurial people that almost cross the line of being subversive. They're the folks that constantly ask "why not?" at the least convenient time. Their very nature makes them question the status quo.

Be prepared to spend extra time with these dreamers, reinforcing and negotiating the common vision. Not everyone is cut out for this. Some people are just not wired to work at the threshold of innovative concepts. Probably very few are. Ambiguity makes many people uncomfortable. These folks may be better utilized as the dependable resources for implementing commercialization.

Many companies begin their journeys into innovation with the Engineering or Research departments. They're a bunch of techies, right? Seems like the natural home for innovation. That way, they can come up with some wonderful new inventions that delight everyone. These groups become known as R&D, skunk works, advanced development or other such colorful names. Some legendary products have come from this type of system.

This type of system is not sufficient to guarantee systematic innovation, however. For this type of system to succeed, you'll need that rarest of breeds on your side, the person that fits comfortably within both the engineering and the marketing worlds. You will need this person to be the bridge between the world of black and white techno-speak and the world of needs, spin and customer delight. The type of individual that makes this system work may be engineers that are end-users of your product or service. These are the techies that don't give you night terrors when you think about putting them in front of a customer.

Continued on next page

What about the Customer?

Of course, you do have to include the customer at some point. By now you're aware that you can't simply walk up to them and ask what innovative things they're looking for. That's a bit like traveling back in time to the 1950's and asking passers-by what type of keyboard they want for their laptops. Innovation is about the underlying problems of everyday existence. It comes out through frustration with current solutions, the Holy Grail-type function that nobody's product can get to. They are the suggestions that sales people laugh off as impossible when you bring them up.

Voice of the customer-type processes are a good way to get at this information and are well documented. In short, this type of process asks you to watch your customers in action. Look for curious practices that go along with your product or service. See how they really act. Cross-functional representation on these teams is very important. You never know where that next great idea will come from. Your manufacturing person might just pick the killer feature.

Another effective tool is to leverage internal company knowledge. The idea is to stage a group exercise. A facilitator should lead the group through exercises designed to bring out the sci-fi type of ideas latent in the heads of group members. A good facilitator will cause the group discussion to first diverge, almost to the point of silliness, then bring it back to some concrete concepts. Bring representatives from differing functions or points of view. You may even want to have some of your lead adopter customers attend too. Beyond the list of cool concepts, a meeting like this will galvanize the group and create a language and culture of innovation that can last for years.

Both these approaches to identifying innovation opportunities create lists of ideas. Be careful to challenge ideas that are specific products. Specific product ideas are a person's perceived solution to a problem. Their assessment of the problem is probably pretty good, since they're experienced in their craft. Challenging them to identify the problem associated with the product concept brings some important benefits. First, discussion of the problems brings further focus and refinement to the understanding of the issue.

Secondly, couching an idea in terms of a product brings baggage with it. It immediately places you in your current paradigm of operation. The discussion heads toward "which plant will we manufacture that in," or "we can't use our current packaging." Knowing the underlying problem, however, allows you to explore other solutions without the bias and baggage of putting a product around the concept. Further, it allows you to combine many different 'product' ideas into a relatively few innovation opportunity statements.

Failures are acceptable as long as the organization learns from the experience. Note, I said "organization" and not simply the individual.

Some Final Thoughts

By now, you've recruited the right people into your fledgling innovation engine. You've had the debates at the top and will invest in this type of work amongst all the noise of your everyday world. You've been out to observe your customers. You have a list of key problems in your area of business. Now what? Executing on the ideas should be as systematic as your approach to gathering them. Please note we're talking problems here, not finely honed sets of requirements. Therefore, your process will resemble a scientific experiment more than a product commercialization effort. Develop a simple process to clearly identify where the effort stands. Although the outcome of the experiment may be uncertain, the timeline and resources needed to complete the experiment should be crystal clear.

Once you get going, show some patience. It will take some time to get the programs flowing and tied to product roadmaps. You will have "failures," in the sense that it is determined that the proposed innovation is unfeasible. Failures are acceptable as long as the organization learns from the experience. Note, I said "organization" and not simply the individual. You will have successes too. Celebrate both. ■

About the Author:

Jeff Krull (jeff.krull@sloanvalve.com) is the Vice President of Research & Development with Sloan Valve in Chicago. With over 18 years of industry experience, Jeff has been Vice President of Product Development for Shure, Inc. His organizations have produced products that have won several industry-related and innovation awards. Jeff holds Bachelor's and Master of Science degrees in Mechanical and Aerospace Engineering from the Illinois Institute of Technology, and an MBA from the Stuart School of Business.

Turning Innovative People into High Performing Teams

Steven A. Jacobs

Leaders working in R&D, in any organization, have many challenges. Frequent meetings, updates, budgets, internal politics, evaluations, counseling, hirings and even lay-offs distract from the focus on creating new products and technology, and bringing the results down to the Company's bottom line.

So it was with much trepidation that Joe walked into his boss Larry's office to find out what Larry, VP of R&D, meant when he had told him, in the hallway, that he had volunteered him for a wonderful opportunity.

"Joe, I need you to lead a new idea I have to make R&D successful. For too long now, we have taken our product leads from Marketing; and as much as that has worked to a degree in the past, it is not the future of this company."

"Sounds good, Larry," Joe responded with a smile. He, too, thought that Marketing was too involved in new product idea generation, and that wasn't always a good thing. "One quick question – why me?"

"You're prior military. I suspect you're a proven leader or you wouldn't have made it to the rank of Captain," Larry said matter-of-factly. "You'll be in charge of one of the I-teams we're about to create."

The look of uncertainty must have been clear on Joe's face as his boss went on. "The Innovation, or I-teams, must fill this company's new idea pipeline and help the bottom line. Our new approach needs to remain hush-hush, as it may not be received well by other departments. We'll be killed if this gets to the head of Marketing before I have the chance to prep her."

"You can count on me," Joe said, with a bearing that hid his concerns.

"By the way Joe, you'll be doing this on top of your regular job, as we can't afford to lose any time on any of the current projects. Good luck." Larry was already busy responding to e-mail as Joe looked back and quietly left the office.

As Joe headed back to his office, he knew the team had to be successful – not just because he liked Larry, but also because he liked his job and the company. And right now, the company's pipeline contained more line extensions than you could shake a stick at.

He began to focus on what needed to be done to assemble a top-notch innovation team from a list of very diverse R&D folks. The first thing was looking in the mirror, to make sure he was up for the job. He reflected: "Can I do this? Doesn't matter, I have to. What makes me right for this job? Well, I'm secure in what I know and what I don't know (which is quite a bit). I'm a servant leader. I devote himself to the needs of the people on my teams." He knew he always took care of those he led, as he was inherently aware that their success meant his success. This he knew for sure, as he had experienced it many times. He always looked for talent and sought to surround himself with the best.

Servant Leaders

- Devote themselves to serving the needs of organization members
- Focus on meeting the needs of those they lead
- Develop employees to bring out the best in them
- Coach others and encourage their self-expression
- Facilitate personal growth in all who work with them
- Listen and build a sense of community

With this attitude and its attendant successes, Joe had become the "go-to guy" in his area, and many with whom he had collaborated wanted to work with him again. Joe brought out the best in people. He coached them, challenged them, encouraged their self-expression, talked to them as often as possible and, more importantly, listened to them and their concerns. He gave them what they needed to do their jobs, praised them in public, and told them what they were doing wrong in private. All this was done while setting a challenging pace and expecting them to hit their timelines and milestones.

What people really liked was Joe's calmness in nightmare situations, his ability to flex his leadership style, and how secure he was in what he knew and what he didn't know. Joe had often noted that the root of many arguments and conflicts was an underlying sense of insecurity. He felt that fear of looking stupid kept people from learning, growing and getting better. Accordingly, he was never afraid to ask questions about things he didn't know, and never seemed worried about looking "stupid."

But Joe also knew that he had made many mistakes. Chief among them was sometimes hiring the wrong people. He had learned from the book *Good to Great* that you must take the time to get the right people in the right positions, roles that matched their talents, and to get the wrong people out the door as fast as possible. The company didn't always allow the time it took to recruit and hire the right people for the right seat; but he had found that, if individuals were hired on probation and it became clear they were wrong for the company, he should get rid of them fast. He did this transparently and constructively. In effect, he verbally held up a mirror to them: "This is you and your talents and strengths, and this is your job. Notice the two don't match. We have to fix this." This led to 50% of the folks Joe fired hating him, and 50% coming back to thank him for his honesty and forthrightness. It had also allowed him to build very good teams.

Part of his selection criteria was encapsulated in an acronym his colleagues made fun of. "Look folks, I like to lead, and be on, teams that have a very high 'PWF'." This, he explained, stood for "Personal Weirdness Factor." He had discovered two very important things in his years leading teams. Normalcy sometimes equated with a certain level of risk aversion or "groupthink". Little

Continued on next page

innovation came from teams of "yes men." Also, "straight A students," upon entering the corporate world, often had difficulty handling the failures they had never experienced in school and were thrown off balance when they did not feel valued or listened to as much as they were used to.

> ***Characteristics of High PWF Folks***
>
> (PWF – Personal Weirdness Factor)
>
> - Individuality
> - Challenge each other's thoughts and ideas
> - No "Yes" folks (one of you is redundant)
> - Little similarity of thoughts/high diversity (cultures)
> - Embrace Imperfection – Fast!
>   "Beware of perfect people. They will never propel your enterprise to greatness. They're too cautious. You've got to be fast to be good."
>   (Dick Brown, CEO of EDS)

So it was with these concerns in mind that he studied the personnel records of prospective team members; talked to some of their colleagues; and went on to choose a team made up of R&D professionals with a very high PWF and a record of being good teammates and inventors. The team was composed of six people: Tom, a young engineer and a rock and roll drummer in his off time; Christine, an Irish-born Ph.D., who was very smart, quick to laugh and had six patents under her belt; Elaine, who, as an information specialist and Internet addict from the corporate research library, "lived to surf and surfed to live" and also had three patents; Zhou Li, a first generation Chinese scientist, who often came up with interesting ideas and, with 18 patents, seemed to have an excellent track record for creativity; Bill, an introvert engineer with a quick mind, dry sense of humor, and keen eye for group dynamics, and who typically only spoke when he had something of value to add. Joe, as team leader, rounded out the group. He considered his PWF also rather high due to his "twisted" background in medicine, experience as a military pilot and maintenance test pilot, an MBA in global management, and over a dozen business trips around the world working with global teams. This team was imperfect; and partly because of that, Joe felt that it had great potential for creativity and innovation.

Joe knew too that, for these individuals to meld into a high-performing team, they would have to establish a constructive culture early, build trust, and ensure their collaborative and creative values were aligned. He knew from experience that trust was an absolutely essential part of any team. Without trust, you didn't have a team; you had a bunch of individuals who would do anything to survive, including throw each other under the bus. Further, this group would have to follow Tuckman's team development path of "Forming, Storming, Norming and Performing."

Joe, for this project, would be assisted by a facilitator, Anthony, who would give Joe more time to watch, assess and drive the team dynamics and culture. He could also compare his perceptions with Anthony's.

The first team meeting was an interesting one. Everyone gathered together looking to Anthony and Joe to tell them what was going on, as this was still "hush-hush."

"I've brought you here today," Joe started out with a smile and then quickly changed to a tone of all business, "because we have a very important task at hand. The survival of the company is in our hands. We all know that R&D has not been the driving force in coming up with new products, and we have been tasked to fix that. We have to come up with highly innovative products to add to our company's pipeline."

"That's not the worst news," Joe said looking at all of them for a reaction. "As your team leader, I am not even in the same ballpark as you with regard to your subject knowledge. What I do have, that will be of value to this band of brothers and sisters, is the ability to lead, drive, ride herd over and protect this team so that we will be successful. Mark my words: when we are done, we will have come up with some amazing ideas." The expression of confidence on Joe's face hid his concerns well.

From there, Anthony took over and started the discussion with introductions, going over the agenda, timeline and expectations of the group. He also led them in establishing the team norms. "OK, gang, the challenges for us will be myriad, but the team will ultimately be successful," Anthony stated with utter confidence as well.

For the next five weeks they met to brainstorm and then narrow down their options, then brainstorm again, and then narrow down the options once again. Anthony told them the best ideas came after the easy ideas were out of the way. Complying with Anthony's requests and visiting different facilities, the team met before, during and after work for discussion; and it was at week seven of a 15-week timeline that the team finally exploded. In a private meeting away from Anthony, they turned to Joe and said, almost in unison, "This is going nowhere! We're sick and tired of thinking up ideas and not developing them. We're tired of Anthony's constant iterations with no movement forward!" So after more listening and discussion, Joe said, "I'll talk to Anthony before our next group meeting to prep him and at the team meeting we'll put our cards on the table and figure out what we need to do to get everything back on track."

When Joe met with Anthony and told him the situation, much to Joe's surprise, Anthony smiled and said, "Good – this is just what I was hoping for!"

"Anthony, the group and I are rather frustrated, and you've been hoping for this? Bring me in out of the fog, my friend."

"Joe, I'll explain it to the group at the meeting."

The body language at the next meeting was quite interesting. Although the team came with folded arms and legs and rigid bodies and frowns, Anthony moved the meeting along beautifully.

"OK gang, I hear you're not too happy with me. Tell me what your concerns are." The comments came in rapid fire…

"We're not going anywhere."

"We're not doing our jobs."

"We're spinning our wheels."

And then finally, "I'm getting heat from my manager that I'm spending too much time on this, and I quote, 'worthless innovation project du jour,' and it's taking time away from my real job."

The chorus of "me too's" went around the room, and that's when Joe realized what the situation was. The anger at Anthony had been a result of the unbearable pressure their bosses had been putting on them regarding their job focus and dedication.

Anthony, who had been listening carefully said, "I was expecting this, folks. You're going through storming, and now we know why. If you make it through this – and some teams never do – you may wind up being a high performing team." The light over Joe's head could brighten the room. He knew what team development was required, but being so close to the action, had missed it.

"Ok folks, that brings new light to this problem," Joe said. "Here's what I'll do. I'll go to each of your managers and tell them what the situation is. I'll tell them to lay off you, as this is an extremely important project and team. Then I'll go to our VP and ask him to have a word with each of them. That will "align" their thinking and help them to understand the importance of what we're doing here. And if they don't back down, I will smite them as, in the immortal words of Elwood Blues, 'We're on a mission from God' here!" That got a hesitant laugh and the tension in the room started to ease. Joe leveraged their common enemy, as he had seen that was exactly what many teams needed to polarize and come together in a common goal. He also realized that he had gotten too focused on the deliverable and had to allow the group, and himself, when the pressure became too much, to relax, break away from the task at hand, talk openly and have some fun.

At the next meeting, smiles were evident around the room. Their bosses had been talked to, their lives had gotten better. Trust and their respect for Joe began to grow. The following meetings became better and better, and the team ultimately generated six patentable products. Team members began to laugh more with each other. They relied on each other to create an environment in which innovation occurred regularly. They finished each other's sentences and began to meet after work to socialize over drinks.

Joe realized the secret to building the trust in a team was that they all needed to exhibit and embody the "4 C's": Consistency, Competence, Commitment, and Character. Live those and trust followed. Anyone that didn't exhibit those needed to be replaced. This team lived them and breathed them. Trust and teamwork had evolved to a level Joe had seen only one other time in his life, in the military. This truly had become a high performing team.

When it came time to present the ideas to Larry, the team couldn't have been more prepared and proud. The presentation went well. Joe asked each member to present a product idea so that all could be seen and praised. The team then was asked to present to the head of Marketing and eventually the president of the company, who were both duly impressed with the ideas and the outcomes.

After the provisional patents were filed, the team asked Joe to beg Larry to keep the team together, as they had never before enjoyed being on a team this much and wanted to continue their highly successful work for the company.

The look on Larry's face, when Joe asked him not to disband the team, was utter astonishment.

"Joe, that wasn't the idea. We can't keep the team together. They have other jobs," Larry said.

"I know Larry, but these folks want to keep going and make a difference for this company. Do me a favor and think about it. This could be a big opportunity."

Two days later Larry came back to Joe with bad news. There was just no way, with a hiring freeze on, to do it, and the team was to be disbanded. Joe knew that was going to be devastating to the people and the company – as competencies traveled, but high performing team members did not.

Two weeks later, Tom, the engineer rock and roll drummer, told Joe that he was leaving the company.

"Joe," Tom said, "if I didn't know teams could be that good, I may not have looked for another job. Now that I have to go back to my dysfunctional team, I can't wait to leave. I have to thank you for opening my eyes to truly amazing teamwork." Joe thanked him and wished him well.

The trend continued. Two years later, somewhat like the great Ford Taurus team after Ford management had disbanded it, only one person of that I-team was still at the company. All the rest, including Joe, had left for other opportunities.

Joe counted himself lucky for having been on his second high-performing team. The mark for identifying a great team, he knew, was that, after the team was disbanded, members felt as if they had lost a loved one and went into temporary depression. He also knew he would never forget how well the team worked together and how creative they were; and he couldn't believe his luck at having been a part of something great.

Key guidelines for creating and leading high-performing innovation teams:

- Build great teams with a high PWF and then build trust within them.
- Let flexibility and servant leadership be your most prevalent style.
- Find folks that can laugh at themselves.
- Clearly identify the team objective and goals and then create a common enemy.
- Remember that even great teams must develop, including going through a stage of "storming."
- Be ready for change – hold onto the tiger's tail as hard and as long as you can! ■

About the Author:

Steven A. Jacobs, MBA, R.Ph.
President, Global BioPharm Solutions, LLC

Steve Jacobs is a successful business leader, consultant, and communicator. He has been heavily involved in innovation, global cultural dynamics, high performing teams, and clinical supply chain operations for the pharmaceuticals, biotech products and medical device industries. He has been president and Global Chief Operating Officer of a multinational contract organization that served companies like Novartis, Eisai, Lilly and others in the pharmaceutical and biotech sector. He also served as head of US clinical supply operations for Johnson & Johnson.

Mr. Jacobs was a logistics and aviation officer in the U.S. Army, where he rose to the rank of Major and was a maintenance test pilot. His undergraduate degree is in pharmacy from the University of the Sciences in Philadelphia and his MBA is from the University of Phoenix with a specialization in global management.

Customer Value and Competitive Position

William J. Feuss

We've talked about it at Alliance meetings. It's the theme of today's leading undergraduate text in marketing, Armstrong and Kotler, 9th edition. Two Alliance partners – Alcatel-Lucent and AT&T – were pioneers in it. But what precisely is Customer Value, how can it be quantified, and how can it be applied to improving competitive position?

To begin, Customer Value has a middle name, Perceived. Customer-perceived value is a customer's evaluation of the extent that a product or service that he or she actually purchased is worth what he or she paid for it. Why is it important? At the individual level, there is some evidence that value perceptions drive purchase decisions. At the aggregate level, however, there is abounding evidence that relative perceived value drives market share. When this finding was established at AT&T, in the late 1980s and early 1990s, it received the attention of the highest levels of senior management because of the well-supported finding that market share drives profitability (Buzzell & Gale, 1987).

Customer-perceived value is a customer's evaluation of the extent that a product or service that he or she actually purchased is worth what he or she paid for it...

Because it uses post-purchase, aggregated data, what is now called Customer Value Analysis is directly applicable to strategic planning. Strategic planning affects Research and Development (R&D) via its resource-allocation process. In addition, the criteria for the evaluation of proposed R&D projects can include the likelihood to improve customers' perceptions of overall quality and value, and thereby their likelihood to increase market share.

Where did Customer Value come from? Some history might be helpful. At least since the 1970s AT&T had conducted customer-satisfaction surveys, largely for the purpose of regulatory reporting. While the highest-level measure of the survey was overall satisfaction, not perceived value, the surveys contained underlying measures of customers' evaluations of more detailed aspects of their telecommunications products and services. After AT&T's divestiture of its Bell Operating Companies in 1984, it became clear that these surveys were not very useful. The overall-satisfaction ratings had no correlation with market share. While AT&T earned consistently high ratings in customer satisfaction, it was losing customers (Kordupleski, 2003).

In the late 1980s and early 1990s, Raymond Kordupleski led a team of researchers that worked toward the development of more useful customer surveys – surveys that indicated where market share was headed and provided insight into how to improve the company's competitive position. The early efforts were characterized by trial and error, but they became more structured after Kordupleski read Buzzell & Gale's book, The PIMS (Profit Impact of Marketing Strategy) Principles. A major step was the company's abandonment of the construct of overall satisfaction in favor of the following question (Feuss, 2003): How would you rate [Insert Vendor]'s [Insert Product] on being worth what you paid for it?

Notice something subtle about the above question. The company was no longer sampling just its own customers. It was sampling the markets in which it operated. In other words, its surveys, which were administered blindly, captured not only the evaluations of its customers, but also the evaluations of its competitors' customers. Hence, the company could now assess the performance of its products and services relative to those of its competition. Specifically, the company began to calculate relative perceived value, the ratio of AT&T's value rating to that of its competition.

Survey data are generally assumed to be interval scaled; that is, they lack a meaningful zero. Therefore, the division of interval-scaled data is technically inappropriate. Nevertheless, the less-than-totally informed calculation of this ratio, representing relative perceived value, resulted in the discovery of a leading indicator of market share in several of the markets in which AT&T operated. In about 1992, the company gave this ratio a name, Customer Value Added (CVA). Statistically, perceived value behaves as if it is a weighted average of customers' perceptions of overall quality, and their perceptions of price competitiveness. If we conduct a survey that contains the appropriately worded questions for perceived value, overall quality, and price-competitiveness, and we regress value on quality and price, we obtain the following equation:

$$\text{Value} = b_0 + b_1(\text{Quality}) + b_2(\text{Price}) \pm e$$

Where:

b_0 is the intercept,

b_1 represents the weight for Quality,

b_2 represents the weight for Price,

and e is the error term.

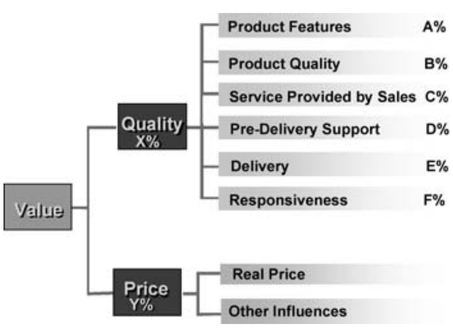
Similarly, overall quality behaves as if it is a weighted average of its industry-specific main attributes. Perceived price-competitiveness is assumed to be negatively correlated with actual price; that is, as actual price decreases, perceived price competitiveness improves. These relationships hold for both absolute measures (i.e., sample means) and relative measures (i.e., ratios).

The recommended language for the overall quality question is very similar to that used in J. D. Power & Associates Initial Quality Survey (Power, 2008; Feuss, 2003): How would you rate the overall quality of [Insert Vendor]'s [Insert Product]? Similarly, the survey should include the following question: How would you rate [Insert Vendor]'s [Insert Product] on being competitively priced? A ten-point rating scale, where 1 means poor and 10 means excellent, has proven to be best for this type of research. The identification of industry-specific attributes and recommendation of language for them are beyond the scope of this paper. Let it suffice to say that these questions should be short, tested for clarity, and few in number.

What Drives Value Perceptions?

There is much theoretical and empirical support for the hierarchal structure of the attributes that form perceptions of value (Zeithaml, 1988). The following example, relative to carrier-grade network equipment, was easily derived from information in a paper by Clark, Cleveland, Denby and Liu (Not Dated) that is available from a Bell Laboratories web site (see Figure 1).

Figure 1 – Alcatel-Lucent's Value Model



The percentages X and Y indicate the relative importance of quality and price in the formation of customers' value perceptions. Technically, they are normalized, standardized betas derived from the previously mentioned regression analysis. Percentages A through F are derived from the regression of overall quality on its formative, industry-specific attributes, and they provide insight into the relative importance of each attribute.

Knowledge of both the relative importance and the company's level of performance on each attribute can help the firm allocate its scarce resources towards areas where innovation and improvement efforts would most likely enhance its competitive position.

We now shift our discussion from importance to performance; specifically, the performance of your company in relation to its competitors.

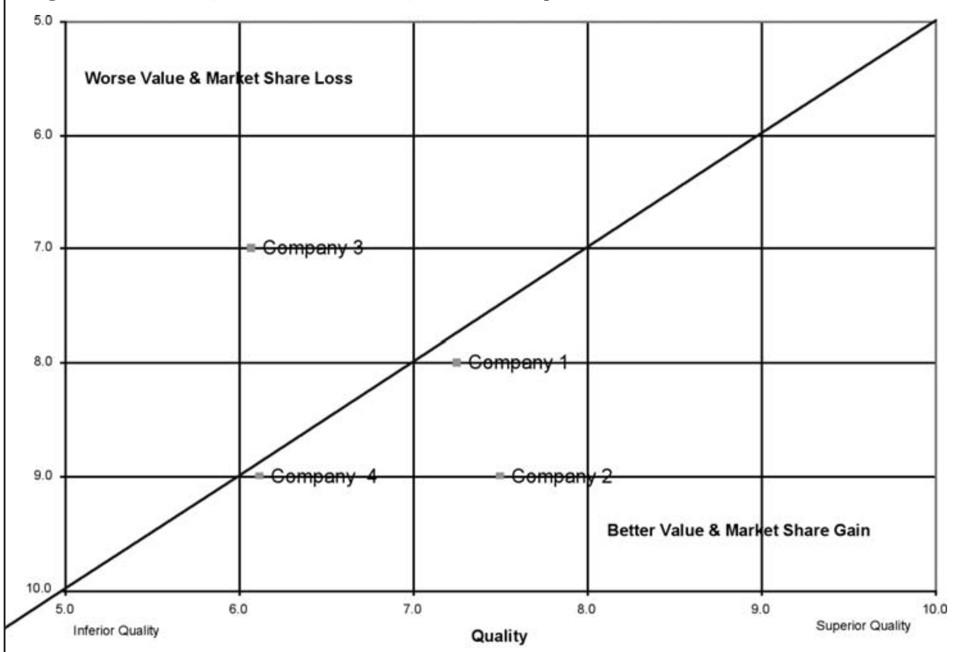
Knowing Your Competitive Position

Knowing your competitive position is the first step toward improving it. In the featured article of the November 2007 issue of Harvard Business Review, Richard D'Aveni wrote: "Whenever I've asked senior executives to map the positions of their company's key brands and those of key rivals, we end up confused and dismayed (D'Aveni, 2007)." This need not be the case. A key tool of Customer Value Analysis, the value map, makes clear a company's competitive position, and it can serve as the basis for strategic planning discussions.

> *Knowledge of both the relative importance and the company's level of performance on each {product}attribute can help the firm allocate its scarce resources towards areas where innovation and improvement efforts would most likely enhance its competitive position.*

The value map was devised by economist Bradley Gale and was first published in 1985 (Gale & Klavans, 1985). It was brought to the attention of a larger audience in the landmark book, *The PIMS Principles* (Buzzell & Gale, 1987). The cross-sectional value map shown in *Figure 2* is an updated version of the original value map that was used by AT&T and Nortel at the turn of the century (*Hafiz & Hendricks, 2001*). It is called a cross-sectional value map because it reflects the results of a cross-sectional analysis of a single period (e.g., quarter) of survey data.

Figure 2 – The (Cross Sectional) Value Map



Continued on next page

The diagonal line of equal (or fair) value on the value map is an isoquant that shows how customers trade-off price for quality. More importantly, it partitions the competitive landscape into two diagonals. Firms that intentionally position themselves in the lower right diagonal tend to capture the market, and those who find themselves in the upper left diagonal tend to either go out of business, or get acquired. The derivation of the isoquant from the results of the regression of value on quality and price (originally done by Khalid Hafiz, unpublished) is beyond the scope of this paper.

The coordinates for each company's competitive position are its mean survey ratings for (perceived) overall quality and price competitiveness. Note that, unlike the original value map, the scale of the y-axis on the cross-sectional value map is inverted to reflect the previously mentioned and well-supported assumption that perceived price-competitiveness is negatively correlated with actual price.

How do we interpret the value map? In the above example, we infer that companies 1 and 4 are providing fair value. Company 2 is providing superior value, and it will likely gain market share at the expense of its competitors. Company 3 is in trouble. Perhaps it will go out of business, or get acquired.

In making these inferences, we assume that the differences among companies are statistically significant.

The third key tool of customer value analysis, the competitive comparison table, allows us to test our assumptions. It contains three main elements:

- The mean performance ratings of a company and its competitors on value, quality, price, and the underlying attributes of overall quality
- The results of tests of significance of the differences between the company's performance levels and those of the competition, both individually and in the aggregate, in the "Diff" column
- The results of tests of significance, in the delta (Δ) column, that compare current performance to prior-period performance, and indicate whether a company's perceived performance has improved, deteriorated, or remained statistically unchanged

The three key tools of Customer Value Analysis are the value map, the value model, and the competitive-comparison table.

In *Figure 3*, Company 1 is the company that is sponsoring the analysis. The "All Others" column contains the results for its competition at the aggregate level. Companies 2, 3, and 4 contain the results for each of its key competitors. All statistical tests are relative to Company 1. A plus sign (+) in the "Diff" column indicates whether Company 1's rating is significantly better than the competitor on an attribute, a minus sign (-) indicates that it is significantly worse, and it is blank if there is no significant difference between the ratings.

The delta (Δ) column contains an upward arrow if the current average rating for the attribute is (statistically) significantly higher than the rating from the previous period of time. The arrow points downward if the perceived rating is significantly worse, and the column is blank if there is no statistical difference between current and prior-period performance.

How Do You Improve Competitive Position?

In 1950, W. Edwards Deming taught the Japanese that they could "capture the market by providing better quality at a lower price" (Deming, 1986, p. 3). That's how companies like Toyota, Wal-Mart, Costco and Procter & Gamble do it. Perhaps during the current economic crisis, it's time to either read or re-read Out of the Crisis, a book that Deming wrote with the aim of "trying to keep America from committing suicide" (Yates, 1992).

Page four of that book contained the famous Figure 1 that Deming used in Japan as a starting point for its reconstruction. We might well consider its many messages more deeply. Below as Figure 4, with permission of the publisher, is Deming's famous Figure 1 (Deming, 1986, p. 4).

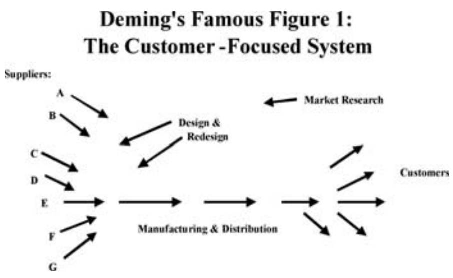
In this figure, the value-creation process begins with market research, which uncovers needs and opportunities, and informs R&D.

Figure 3 – Competitive Comparison Table

Attribute	Company 1	Δ	All Others	Δ	Diff.	Ratio	Company 2	Δ	Diff.	Company 3	Δ	Diff.	Company 4	Δ	Diff.
Value	7.6		7.5			1.0	8.3		-	6.5		+	7.6		
Price	8.0		8.3			1.0	9.0		-	7.0		+	9.0		-
Quality	7.3		6.6		+	1.1	7.5	↑		6.1	↓	+	6.1		+
Selection	7.1		6.2		+	1.2	7.0			5.8		+	5.7		+
Music	7.3		6.9		+	1.1	7.3			7.7			5.8		+
Promptness	7.2		6.6		+	1.1	7.9		-	6.0		+	5.9		+
Beverages	7.7		6.8		+	1.1	7.5			6.4	↓	+	6.5		+
Food	7.2		6.4		+	1.1	7.3			5.9		+	5.9		+
Atmosphere	7.4		6.3		+	1.2	7.4			5.7		+	5.8		+
Convenience	6.4		6.6			1.0	7.8	↑	-	5.9		+	6.1		

This seems simple enough. In reality, however, it appears that most market researchers

Figure 4 – Deming's Figure 1



view their client as the marketing department, and that R&D tends to work independently in pursuit of scientific discovery. When we consider the failure rates for new products, perhaps it would be beneficial to remind ourselves of the two necessary conditions for demand: 1) a need (or desire), and 2) the ability to pay for its satiation. Clearly, Market Research and R&D should work together more closely.

How quickly will our country and our companies emerge from the current economic crisis? It will probably take a long time. Perhaps the recovery time would be shorter if we accepted and understood Deming's teaching that the way to re-capture lost markets is by "providing better quality at a lower price." This is what providing superior Customer Value is all about.

The value map helps companies understand their competitive position. The value model identifies the drivers of value perceptions, and shows their importance in relation to each other. The competitive-comparison table shows companies how they are doing, relative to competition, in the specific areas that matter most to customers. Knowing where they stand, companies can begin to chart a course Out of the Crisis. ■

The author is indebted to AT&T and Alcatel-Lucent for providing him with his grounding in Customer Value Analysis. Both companies were pioneers in the origination of this methodology, and contributed much to its evolution and its place in current industry practice.

Works Cited

Buzzell, Robert D. and Bradley T. Gale, The PIMS Principles – Linking Strategy to Performance (New York: The Free Press, 1987)

Clark, Linda A., William S. Cleveland, Lorraine Denby, and Chuanhai Liu, "Modeling Customer Survey Data," Not dated, and last accessed from Bell Laboratories' web site http://cm.bell-labs.com/stat/doc/cvabayesmodel.ps on January 25, 2009

D'Aveni, Richard A, "Mapping Your Competitive Position," Harvard Business Review, November 2007, p.112.

Deming, W. Edwards, Out of the Crisis, (Cambridge, MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study, 1982)

Feuss, William J., "The Post-Purchase Impact of Brand Image," Doctoral Dissertation (Ann Arbor, MI, ProQuest, 2003)

Gale, Bradley T., and Richard Klavans, "Formulating a Quality Improvement Strategy," Journal of Business Strategy, Winter 1985

Hafiz, Khalid, and Scott Hendricks, Customer Value Management (Houston: American Productivity and Quality Center, 2001)

Kordupleski, Raymond E., Mastering Customer Value Management (Cincinnati: Pinnaflex, 2003)

Power, J.D., & Associates, "Initial Quality Survey," 2008.

Yates, Ronald, "Game Plan – On the Road with the 'Messiah of Management' as He Tries to Do for His Country What He Did for Japan," Chicago Tribune Magazine, February 16, 1992, p. 22

Zeithaml, Valarie A., "Consumer Perceptions of Price, Quality and Value: A Means-End Model and Synthesis," Journal of Marketing, Volume 52, July 1988

Implementing Customer Value Analysis

- Prepare a sampling frame for the entire market that your company serves, not just your own customers, and an appropriate plan for sampling it.
- Like J. D. Power & Associates, use Overall Quality, not Overall Satisfaction, as your measure of overall benefit.
- Use the recommended wording for perceived price competitiveness, instead of satisfaction with price.
- Implement the question on perceived value, using the recommended wording, to capture how customers trade-off price for quality, and to assess your company's competitive position.
- For each key attribute of overall quality, use language that is meaningful to both the customer and the company. In this way, you can more readily identify the features or business processes that would benefit from improvement or innovation efforts.
- Survey the market blindly. In other words, have a market research firm conduct the survey on your company's behalf without identifying your company as the survey's sponsor. The purpose of doing this is to obtain minimally biased performance evaluations for your company and its competitors.
- Know your company's competitive position, and inform the development of strategic plans to improve it, via the three key tools of Customer Value Analysis: the value map, the value model, and the competitive-comparison table.

About the Author:

William Fuess is Assistant Professor of Marketing at Ramapo College of New Jersey. He was an active participant in Alliance Roundtable meetings when he held the position of Director – Market Research & Analysis at AT&T Global Information Services. He received his Ph.D. in Interdisciplinary Science from Stevens Institute of Technology, where he was recipient of the Institute's Outstanding Dissertation Award in 2003 for "The Post-Purchase Impact of Brand Image."

HSATM

HOWE SCHOOL ALLIANCE FOR TECHNOLOGY MANAGEMENT

UPCOMING EVENTS

Eighteenth Annual HSATM Conference - *Leading in a Changing Environment*

Wednesday, June 10, 2009, 8:45-4:45
Babbio Center, Stevens Institute of Technology, Hoboken, NJ

Today's business leaders, in technology, marketing, manufacturing, finance, general management, IT, HR,......., are facing extraordinary challenges. These include a dramatically disrupted world economy, sagging customer confidence and cutbacks, global competitors, the need for constant innovation, multi-dimensional diversity within and among teams, mergers (planned or otherwise), business strategies that require continuous review and frequent change, and turnover in senior leadership. These all spell CHANGE.

Leadership, however, is all about change. It is about plotting new routes to the future, surmounting unforeseen obstacles, achieving distant goals. The Eighteenth Annual HSATM Conference will focus on working successfully through change as the essence of leadership, at all levels of the organization.

Five distinguished speakers will share their views and expertise:

- **Anthony Le Storti**, President, IDEATECTS, The Core Challenge of Leadership: Leading For and Through Change
- **Richard Reilly**, Emeritus Professor, Howe School of Technology Management, Stevens, New Models for Leading Organizations: How the Virtual Age is Transforming Leadership
- **Steven Jacobs**, President, Global BioPharm Solutions, Leading Culturally Diverse Organizations
- **Guido Petit,** Director, Alcatel-Lucent Technical Academy, Alcatel-Lucent Bell Laboratories, Innovation Leadership in a Fast-Changing Global Organization
- **Peter Bregman**, CEO, Bregman Partners, Change Rules: *From* A Good Idea *to* Everyone is Doing It

The presentations and the panel discussion following will provide many practical ideas for working through change and managing change successfully. The Conference will appeal to technology managers, product managers, marketing managers, new business development personnel, project managers, HR managers, corporate and business unit managers -- in short, to everyone concerned with leading change, at every level of the organization.

For further information, contact Sharen Glennon (201-216-5381 or Sharen.Glennon@stevens.edu). For abstracts of the speaker presentations or to register, go to http://howe.stevens.edu/hsatm_conference/

Roundtable Meeting - Working in the Virtual Environment: Practical Experiences

April 29, 2009, 12:30 - 4:30 (Lunch 11:30-12:30) • ARDEC, Picatinny Arsenal

Details are available - http://howe.stevens.edu/HSATM/

Project Management Symposium

May 28, 2009 • Babbio Center, Stevens Institute of Technology, Hoboken, NJ

Details of the program will be announced shortly.

INFORMATION

For further information on HSATM activities or to submit an article, contact Dr. Lawrence Gastwirt at **212-794-3637 • Lawrence.Gastwirt@stevens.edu**

Visit the HSATM website: **http://howe.stevens.edu/HSATM**

To download articles from past issues: **http://howe.stevens.edu/HSATM/Newsletters**

Wesley J. Howe School of Technology Management
Stevens Institute of Technology, 1 Castle Point on Hudson, Hoboken, New Jersey 07030

Sharen Glennon 201-216-5381 or Sharen.Glennon@stevens.edu

HSATM Director
Dr. Lawrence Gastwirt

Director, Mgmt. Technology Transfer
Dr. Lemuel Tarshis

HSATM Partners

Alcatel-Lucent

AT&T

Infineum Ltd

ISO

Johnson Technology Systems

Navmar Applied Sciences

Novartis Consumer Health

Teknor Apex

US Army Research, Development, and Engineering Center

US Navy Strategic Systems Program

STEVENS
Institute of Technology