



The Lean Evolution: From Factory Floor to Service Centers -- and Beyond

Published : November 11, 2009 in [Knowledge@Wharton](#)

In 2008, the University of North Carolina Health Care System faced a challenge: Length of stay per patient at this major nonprofit health system and academic medical center was longer than it needed it to be. If administrators could figure out how to cut the length of stay by an average of just 10% -- without compromising patient health -- the system could add tens of millions of dollars to its operating budget and, most important, provide care to more patients.

Reducing UNC Health Care's length of stay without affecting quality required analyzing every aspect of patient care, identifying inconsistencies and redundancies, and finding ways to improve the service, according to Jon Scholl, a partner and managing director at The Boston Consulting Group (BCG). One step involved setting goals for shorter stays and putting a whiteboard in every room. "The nurse writes daily goals on the board," says Scholl, who helped guide the health system through its successful initiative. "This involves patients in their own care. Now they have a sense of what needs to happen before they'll be discharged, and what progress they've made." It gives them goals to shoot for - and most times they achieve them.

Additional steps involved daily care-plan meetings and improved communications based on centralized, accessible data. "One Friday, the Orthopedics care coordinator had a meeting about a patient," says Scholl. She and the nurse noticed that everything on the care plan was completed and the patient was in good health, except for one last thing: a final visit to physical therapy (PT). "So the nurse took the initiative to contact PT, which changed its schedule to accommodate the need. This freed up a bed on a Friday instead of a Monday" and shortened the patient's length of stay.

No one had to work more hours. No new hires were needed. In other words, UNC Health Care did more with less -- the classic definition of "lean." But wait: Where is the assembly line? Where are the widgets? And where are the across-the-board layoffs? Today, lean initiatives are popping up in health care as well as in research and development (R&D) and other functional areas previously outside of lean's purview. These initiatives are a far cry from reductions in force, rote factory protocols and other cost-cutting tactics traditionally associated with lean.

In this article, part of a special report on how lean processes can transform businesses beyond the shop floor, experts from Wharton and BCG explain how thinking lean can drive significantly better results from service organizations, corporate functions, even from innovation efforts.

Begin with Questions, Not Rules

Christian Terwiesch, a Wharton professor of operations and information management, remembers trying to talk with hospitals about lean initiatives several years ago. "They thought I was evil," he recalls. "They said, 'We're doctors. We help people. We are not Toyota!' Now these same institutions have chief medical officers saying, 'We want to run this place like Toyota!'"

"The old world of lean was primarily about optimizing what you were doing on the shop floor," says Aryn Merchant, a senior partner and managing director at BCG. "It was about figuring out how to move an item from Location A to Location B." Today, he says, "Lean is not just widget management. It's about process management and information-flow management."



This is a single/personal use copy of Knowledge@Wharton. For multiple copies, custom reprints, e-prints, posters or plaques, please contact PARS International: reprints@parsiintl.com P. (212) 221-9595 x407.

According to Hal Sirkin, a BCG senior partner in Chicago and global leader of the firm's operations practice, companies should always begin their lean efforts by asking: What are we trying to achieve? "It doesn't begin with a rule. And it's not about isolating one piece of a business and deciding its fate. It's about rethinking every business process." It's not about cost cutting across the board, he says. It's about judicious investing. It's not about starving. It's about building muscle, trimming fat.

Sirkin notes that an increasing number of lean initiatives are happening outside the factory -- in call centers, for example. The process, he says, starts with questions. "Do you understand your customer segments? Can you serve the most valued customers more effectively? How are calls routed and how long does it take for reps to resolve an inquiry? Where do they go for information? Three screens? Scrolling? Is there an easier way?"

Wharton operations and information management professor Serguei Netessine says the evolution of lean involves two key things: "One is better tools, and the other is a greater sense of urgency in an economic crisis." Lean springs directly from the Toyota Production System (TPS), says Netessine. "It was created in very similar times, after the Second World War, when Japan was in crisis. In those years Toyota had to innovate, to create value from nothing. They didn't have much money or many resources. They were forced to create lean."

Tapping Collective Intelligence

Years later, lean is spreading from its nuts-and-bolts origins and is moving throughout the organization -- even over to R&D, to knowledge workers. What's new about lean in the R&D wing of the organization? Adam Farber, a BCG partner and managing director, says it's about having a cross-functional thought process; viewing the business as a system and understanding how things need to be connected, from activities, to metrics, to incentives. "We've seen this starting to play out in the pharmaceutical industry," he says. "It is quite ambitious."

Today, explains Farber, "we use the term 'tapping the collective intelligence of the organization.' Instead of having someone come in, not think, just transact, we ask, 'How do we allow them to be a business owner, to improve the process, to tell their supervisor what can make the job better?'" And when this happens, he says, employees adopt a new attitude about coming in to work. They feel as though they count. "The collective intelligence of the organization is being tapped," says Farber. "This has to be done systematically."

It's about Overhead, Not Labor

When people think about lean, they often associate it with reducing the workforce, Farber says. But the cost is not in the line labor, it's in the overhead, he says. The most important thing is the seamless integration of everything that goes into the production, Farber adds. "Take a pharmaceutical company with a quality control and assurance organization whose goals are not 100% aligned with production goals. There may be something broken between management and support functions." If so, it's time to ask whether you understand the business requirements and whether functional groups are aligned around product flow, Farber says. Find out if the metrics are in place. "When there is a fundamental shift and the system no longer works, revisiting the system top down and engaging colleagues bottom up has to be the focus."

A key part of this involves looking at the business differently, says Farber. "It's not about hiring a star. It's about system-wide efforts -- production, quality, engineering, maintenance, everyone showing up on time. And you need metrics." At a hospital, you need metrics on moving patients from the operating room back to bed, for example. That requires getting nurses, techs, and other hospital employees into a collective dialogue around ensuring efficiency.

Service organizations can look to manufacturing for lessons on lean. Lean production tries to smooth demand, notes Noah Gans, a Wharton professor of operations and information management. A good example from the manufacturing world is the Christmas toy season. "You don't open your factory the month before Christmas," he says. It's best to build inventory slowly months out. Then it starts to pay to carry some inventory. But if production is not synchronized, "You may get stuck with lots of inventory." In manufacturing, Gans says, customers don't see how the thing gets made. They probably don't care. But

in service businesses, "Customers see the process. In many cases, it's personal. So if your service doesn't track customer dissatisfaction you might never know about your product." Many service organizations would like to have the same economic quality-control discipline as manufacturers, Gans says. One way to do it: Offer service guarantees. "This is a lean notion transferred to services."

BCG's Merchant recalls an initiative at a consumer goods company to improve efficiency in Indonesia. The company needed to transport bottles of liquid hair dye from two major centers to a range of islands by boat, car, truck, plane and rail. "The bottles created a shipping nightmare," he says. During the long, rough route from the distribution centers to the outlying areas, the liquid often leaked. According to Merchant, "Trucking the goods to the urban centers was easy, but that accounted for only 25% of the products." The lean process involved segmenting the entire approach. The key question: How can you get the product to outlying areas with less shrinkage? The answer: Ship the product in a powdered form. "You just add water later. Now you're shipping powder more efficiently in little sashes that don't spill." That is a leaner distribution.

Yet, like many philosophies in life, lean is more easily studied than practiced. It's easy to observe but hard to replicate, says Wharton's Netessine. "Toyota has always been open about lean. They invite people to tour the factory and see for themselves. Companies try to re-create it. It seems relatively easy on the surface, but it's hard." People see the results, he says. But they don't always appreciate that the results came from comprehensive analyses, deep questioning, and out-of-the-box thinking.

Wharton's Terwiesch says lean initiatives begin with identifying and standardizing a process. "Try to think of your business as repetitive," he says. "You're not a robot, but even heart surgery is repetitive. A lot of what we do is repetitive, but we don't think about that." After you think about your processes, says Terwiesch, set some milestones. "It could be how long someone stays in the (intensive care unit), or it could be a manufacturing process."

Next, measure performance. Many companies struggle to align lead times, inventory and other data to financial measures, even with performance metrics in place. This problem arises when companies don't measure the right things -- usually because they haven't thought deeply enough about their own processes. Instead of coming to a better understanding, he says, "They die a death of a thousand metrics." Finance people may not recognize the meaning of it when machines aren't calibrated or processes aren't aligned. "They don't realize that machines are down for long periods mid-shift. At big companies there are so many sub-units or plants, you don't typically get into that level of detail," he says. Senior management tells middle management to get metrics, but no one is looking at the big picture. They're not thinking about the underlying processes. But that level of thinking is exactly what's required to go lean. "You have to rely on the folks who are involved in the trenches," Terwiesch says. "You have to change the identity of the worker from human robot to problem-solving partner."

Toward a Lean Transformation

Wharton management professor Lawrence G. Hrebiniak has seen cases where one business acquires another but misses the opportunity to create a lean version of the new organization. "They could be buying a business that would open a new door to them, a tech division, for example. But as soon as they acquire the new business they make cuts across the board. They're trying to be fair. Instead, they should be rational." Most important, he says, is communication. Companies need to know how to share knowledge across the silos. But people don't always understand the matrix. For example, consider a firm in global competition. There may be a low level of interdependence here may be many global divisions. Maybe they are all profitable, but with very little sharing among them. But "you still need a coordinated global strategy. Say you're doing something in the U.K. and doing something in Italy. You may need to manage the movement of products across countries. That's complex knowledge sharing."

Organizations considering a lean transformation would be wise to consider the following:

- **Start with a pilot program.** BCG's Farber describes working with a company that ranked last in quality and last in cost performance, and wanted to improve both. The company had a network of about 10 plants. The owners wanted to improve the entire network's performance. They knew that some of the business unit leaders would buy in, and some

wouldn't, says Farber. "Some were ready for a programmatic effort, some not. So the answer was to go to one plant, do the work there, make it a star performer, and then apply it to the other plants." Often, he says, this pilot approach evolves naturally. "One site leader or functional group takes it on, and there's a dramatic improvement. People say, 'Wow what did you do?' Then it can be replicated." Farber warns that the initiative can go wrong when the fix is determined by the experts and then rolled out to the whole system. This ignores people and their potential for contribution and engagement.

- **Focus on continuous improvement.** This is a way of life, a continuous process that never stops, says Netessine. "TPS wasn't implemented just once. It's constant improvement, constant innovation and constant elimination of extra steps. The most important principle is that this is not a four-month project. You will see benefits, but you must do it continually."
- **Change how you work and how you think.** Stop treating your workers as people who do as they are told. Your line workers should be innovators. Remember, they face problems every day. In most organizations, their problems are ignored or worked around. "At lean companies, management listens to workers' recommendations," Netessine says. "They take workers' comments seriously. That's a big change."
- **Find and fix problems early in the process.** Most companies produce a final product and then try to check its quality, says Netessine. "But once you produce the product, it's incredibly expensive to fix quality problems. It takes GM as long to fix a quality problem as it takes Toyota to produce a car from scratch. You have to raise a red flag right there." And when you do, he says, people will try to stop you; they'll tell you it's crunch time. They promise to deal with it later. "At Toyota, one person on the line can pull a cord and stop production," says Netessine. "They don't even have to pull it very often because when people see a problem it gets dealt with."
- **Involve frontline employees in problem solving.** Get them thinking and talking. And start listening to them. Ask them about root problems, and then solve those root problems, says Netessine. "A lot of times, companies solve symptoms but not actual problems. At Toyota, workers ask four 'whys' about each problem. Why does this happen?" Once they get the answer, they ask, "Ok, so then why does *that* happen? They keep asking, following the symptoms back through the layers until they arrive at the root cause. This kind of questioning drives organizations to continuously solve root problems."
- **Appoint a CPO (chief process officer).** Select someone who can see the big picture, think out of the box, ask the difficult questions, help rethink business processes, analyze each customer segment, and keep the organization focused on the right questions.

For years, many professionals and most knowledge workers thought that lean applied to blue-collar workers, not to them. "But now we've seen these lean tools, and this lean mentality applies to all jobs," says Terwiesch. "It's good management."

This is a single/personal use copy of Knowledge@Wharton. For multiple copies, custom reprints, e-prints, posters or plaques, please contact PARS International: reprints@parsintl.com P. (212) 221-9595 x407.