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Lean In Hard Times

The Gift of Desperation

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Lean For Hard Times

Never Waste A Good Crisis

When hard times (recessions, financial crises) hit the usual reaction is to cut cost in every possible way. Rarely do managers propose new improvement programs or the acceleration of existing efforts. But a crisis is often the best time to implement Lean Manufacturing. Many of the most successful practitioners and originators of Lean started their efforts in the midst of a crisis. We show examples here from Ford Motor Company, Toyota and Harley-Davidson.

There are several reasons why a crisis is the best time to start with Lean. First, a crisis makes the required paradigm shift easier and faster. Second, Lean programs are usually self-financing and do not require injections of cash. Finally, the cash-flow benefits come very quickly.

The Paradigm Problem

A paradigm is a philosophical or theoretical framework; a way of looking at the world; a mental model (in Senge's terminology). Paradigms operate at both the individual and organizational level.

The human brain, being essentially a self-organizing pattern recognition system (in DeBono's words), tends to bend external facts and phenomena into the established paradigm. The paradigm or model only changes when facts and phenomena can no longer be stretched to fit the paradigm.

In the world of manufacturing, certain paradigms were established in the period from about 1890-1930 when manufacturing had its greatest successes. But the world has changed a lot and the old paradigms are not always valid. Past success makes a paradigm even more difficult to dislodge or change.

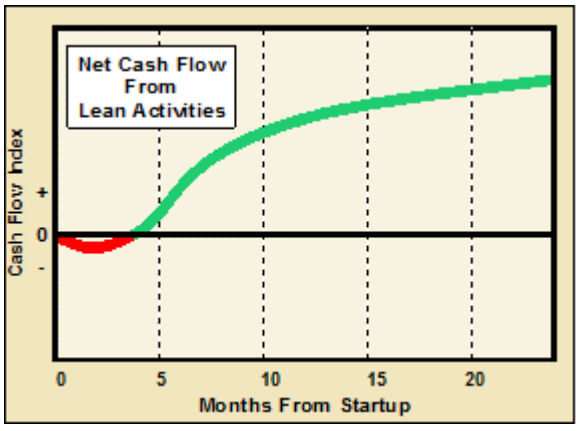
Lean operations require a major paradigm shift. When times are hard and the situation desperate it is difficult to ignore the fact that the old paradigm is not working. Hence, the organization is more open to change.

Self Financing

A well-planned and executed Lean implementation is generally self-financing, i.e., the increased positive cash flow pays for the implementation as it goes along. This is especially important when times are tough and credit is unavailable.

Early Cash Flow

Unlike most business improvements such as computer systems and new equipment, Lean requires little expenditure early in the program and the most dramatic results come early. The figure below shows generalized net cash flow from a well planned and executed implementation.



In the first few months of an implementation, expenditures are usually for some preliminary training, a few kaizen events and changes in procedures. This results in significant inventory reductions that bring in a lot of cash. Productivity improvements require more time and the cash flow is less than the cash flow from decreased inventory.

Later in the implementation, the costs are greater because the activities may include more in-depth training and more investment in equipment and systems. However, by this time productivity improvements are contributing to the positive cash flow. Inventory reductions, while less then they were initially, are likely to continue for several years.

The Gift of Desperation

The pages below contain three examples of well-known firms that were forced into Lean by a crisis. In each case, the organization was presented with certain catastrophe if they continued upon their past course. Yet, the crisis forced them to abandon old paradigms. It led them to a course that not only saved the day but also positioned them for decades of growth, profitability and leadership of their industry. **The crisis, it turns out, was a gift--the gift of desperation.**

Ford Crisis of 1920-1921

In the autumn of 1920, Henry Ford was in trouble. He owed money to Eastern bankers, sales were plummeting and Ford Motor Company was losing twenty dollars on each car produced. This crisis inspired a key element of Lean Manufacturing, paid off the debt and enabled Ford to survive the recession.

Background

By 1919 the Model T Ford was phenomenally successful and held 40% of the domestic market. Combined with the moving assembly line and other Ford production methods, it enabled Ford Motor Company to reap huge profits. Henry Ford cared little for personal wealth and reinvested most of the company's profits. He had spent $60 million dollars at River Rouge and at least $15 million for coal and iron mines. The company also had built plants and facilities throughout the country.

While Henry Ford held a controlling interest in Ford Motor, there were other shareholders who thought profits should be distributed. The Dodge Brothers, in particular, wanted dividends to start their own automobile company and had sued Ford and The Ford Motor Company. The dispute was bitter and the ethical behavior of all parties was questionable at best. The final result was Ford's buyout of other shareholders in 1919 for about $20 million, most of which he borrowed from Eastern bankers.

The Recession of 1920-1921

Ford Motor Company entered the recession of 1920-1921 with considerable debt and when sales dropped precipitously a crises ensued. Robert Lacey describes the recession as follows:

It was not difficult to sell cars in America in the months that followed the First World War, since automobile production had been cut back severely as the manufacturers had turned their factories over to war production. With peace, the national waiting list for new cars soon came to number in the hundreds of thousands. As a general economic boom intensified this demand, Detroit discovered how pleasant life could be when America has money to spend.

But the boom ran out abruptly in the summer of 1920. Worried by inflation, the federal government cut its budget, pulling $6 billion out of the economy. Suddenly the Motor City discovered the down side. For it is amazing, when times get hard, how easy it becomes to live with the rust and rattles of the automobile that you had once been intent on trading in. Forgoing the new car is the most obvious economy to make in a time of recession, and recession gripped America. In the autumn of 1920, the cyclical nature of the car business was revealed for the first time: scaling the heights in time of prosperity, but almost at a standstill when the economy slowed.

Ford Responds

A crisis always seemed to galvanize Henry Ford and bring out the stubbornness and imagination in him. He had steered through several such crises in the past.

Ford's first reaction was to cut prices with the largest reduction in automotive history (It had worked before). But, dominant as Ford Motor Company was, it could not stave off a national recession alone. Sales plummeted again and the situation looked increasingly desperate. Henry Ford even organized a gigantic rummage sale that included desks, cabinets and pencil

sharpeners. The general opinion was that Ford would lose control of his company to the bankers. This was especially galling to Ford who had a low opinion of bankers in general and East coast bankers in particular. Now, he owed them $60 million and bankruptcy seemed imminent.

Ernest Kanzler had run the Fordson tractor operations during the Great War. He had been highly successful at reducing inventory and freeing up plant space by scheduling deliveries and shipments exactly when needed. In 1919, Ford brought Kanzler to the Highland Park plant to do the same. Kanzler was just getting started when the recession hit.

When Ford's price reductions failed to maintain sales volume, Ford and Kanzler realized that the inventory strategy might just save the day. Highland Park was awash with inventory and spare parts, perhaps $88 million worth. Kanzler went to work and Just-In-Time delivery was born.

By the spring of 1921 Ford had paid all his debts and the company had a cash surplus of $20 million. Productivity also improved. Prior to the recession, Highland Park required about 15 men per car per day. Afterwards, the factory operated with about 9.0 men per car per day. This was a 40% reduction in labor cost. To top it off, Henry Ford was also in a position to resume his rants about Eastern bankers.

Other aspects of Ford's tactics were more controversial. Ford dealers were required to pay cash on delivery so Ford and Kanzler began sending them cars, along with a huge number of spare parts, whether the dealers had ordered them or not. Owning a Ford dealership was the next best thing to owning a gold mine. So the dealers took the cars and the parts and then borrowed to pay for them. Their only other choice was to relinquish the franchise. (As a side note, the author's great grandfather had been a Ford dealer in Fitzgerald, Georgia at this time. To the end of his life he never forgave Henry Ford for this ploy.)

Ford's suppliers were also squeezed. Ford made Price reductions arbitrarily and payment was unilaterally extended from 60 days to 90 days. The suppliers, like the dealers, had little choice but to go along.

Epilogue

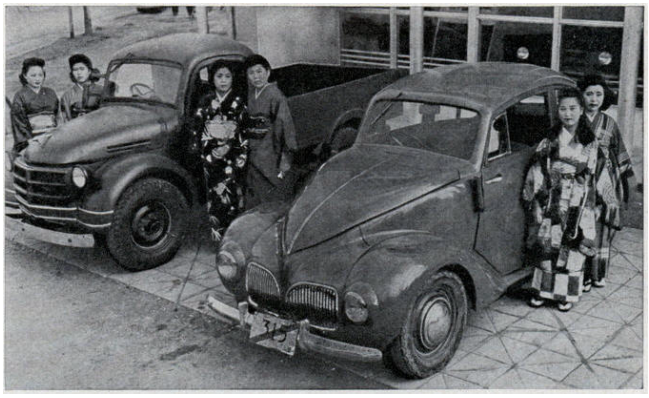
Henry Ford's company survived the crisis of 1920-1921 and the lessons learned served Ford well for a period of time. After World War II, Toyota studied Ford's operations and adopted many Ford methods. While Toyota saw the wisdom of Just-In-Time delivery, they also know that taking advantage of dealers and suppliers would have negative long-term consequences. Hence, they adapted just-in-time methods but coupled them with assistance and a true partnership relationship.

Ford Motor Company has weather several additional crises, in the years since 1921, most notably the introduction of Model A and the death of Edsel Ford and resurrection by Henry Ford II. It has been a remarkably resilient company. It remains to be seen whether Ford will survive the current 2008 crisis.

Toyota Survives War and Aftermath

While the catastrophe of American bombing in 1945 affected all of Japanese industry, Toyota's biggest crises came about five years later. This financial and labor crisis was the inspiration for what became the Toyota Production System.

The Toyota Story



Toyota Motor Company was formed in 1933 as an offshoot of the Toyoda spinning and Weaving Company. It was the special interest of Kiichiro Toyoda, son of Soichiro Toyoda.

The first Toyota truck was made in 1935 and the first passenger car in 1936. As the Japanese army began to drag the country into its Manchurian and Chinese adventures, Toyota converted almost entirely to truck production.

When World War II ended Toyota had 3000 employees and no working facilities. The economy was in chaos. Nevertheless, Toyota designed a new postwar automobile in 1947 and attempted to rebuild the firm.

The Japanese economy continued to suffer and by 1949 raw materials and goods of all kinds were still in short supply. Inflation was rampant, and urban dwellers often traded clothing and furnishings for rice or potatoes. In 1949 the government took drastic measures to control runaway inflation. The anti-inflationary measures reduced consumer demand and totally dried up commercial credit. Toyota's financial situation then deteriorated rapidly. Toyota Company could not meet payroll.

Toyota's labor union went on strike in April of 1949 over impending layoffs. The strike was bitter and negotiations dragged on until bankruptcy was imminent. In the end management and labor agreed to reduce the workforce from 8,000 to 6,000 employees. President Kiichiro Toyoda and his executive staff resigned.

Developing The Toyota Production System

After the strike, two of the company's new executives, Eiji Toyoda (now chairman of Toyota Motor Corporation) and Shoichi Saito, visited the United States seeking new ideas. According to legend he conceived the Kanban idea from observing American supermarkets. Ford Motor Company certainly had a major influence.

Another legend has Eiiji asking his lieutenants why they needed inventory. There were, of course many reasons. Eiiji's response was "Now, please eliminate those reasons." Eiiji recognized that inventory was the footprints left by problems and simply covered up the problems rather than permanently solving them.

Taiichi Ohno was put in charge of implementing the new ideas that evolved into the Toyota Production System. Ohno had a reputation for being undiplomatic (almost ruthless) but he got things done.

He hired Shigeo Shingo to first work on the setup reduction problem. Shingo was spectacularly successful and the solutions became the famous SMED system. It is likely that Shingo was responsible for many of the technical innovations and production ideas that evolved at Toyota.

In the years after the war, Japan was mostly governed by General MacAurthur's occupation staff. In an attempt to distribute power more broadly in Japanese society, MacAurthur's staff encouraged labor unions and greatly strengthened them. Toyota management may not have fully appreciated the new power of the labor union thus helping to provoke the strike. Whatever the reason, the strike must have had a profound affect on Toyota's approach to employees. There has never been another strike.

Toyota's Learning Experience

Toyota emerged from the aftermath of World War II as a small manufacturer of third-rate cars in a backwater market. Today they are challenging General Motors for the position of largest vehicle manufacturer in the world.

The turning point seems to have come with the financial and labor crises of 1949-1950. The crisis led to a paradigm shift about the role of people in Toyota's operations and this was more important even than the many process and technical innovations that all became part of the Toyota Production System and Lean Manufacturing.

Harley-Davidson

Harley-Davidson is king of the road these days. But in 1985 the venerable firm was hours from bankruptcy. A combination of management errors, Japanese competition and recession was about to do in the last American manufacturer of motorcycles. The company was rescued at the last minute by a sympathetic investor and a well-executed version of Lean Manufacturing.

The Harley Davidson Story

Founded in 1903, Harley-Davidson became a leader in motorcycles after the First World War. In 1953 their only domestic competitor went out of business and Harley owned the American market until the 1960s when English, German and Italian manufacturers were their only competition.

In 1965 the founding families took the firm public and it was bought by AMF in 1969. AMF provided stability and capital but there were mistakes. AMF built a new assembly plant for Harley-Davidson in York, Pennsylvania and invested heavily in an MRP production control system. These efforts added $1000 to the cost for each bike and AMF pressured Harley to increase production to compensate. Quality suffered and there were chronic shortages of parts. As many as 30 percent of the vehicles coming off the assembly line were incomplete. This, in turn, meant extra manpower searching for parts to finish the machines. Dealers sometimes had to complete the assembly or repairs.

Japanese competitors took advantage of the situation. In 1969 Harley had an 80% market share for super heavyweight machines but this dropped to 20% ten years later. A recession in 1981 reduced sales nation-wide and further reduced Harley's market share. British motorcycles were driven from the market and Triumph collapsed.

AMF wanted out. A management team from Harley-Davidson arranged a leveraged buyout with the help of Citibank and took control in June of 1981. But, there were more problems to come.

The Japanese manufacturers unloaded their inventory and cut prices further. Then, Harley won an anti-dumping judgment from the International Trade Commission (ITC). Tariffs on Japanese bikes increased to 49.4% for five years. The Japanese response was to build more motorcycles in the U.S.

In 1984 Citibank became nervous about another recession and the coming end to increased tariffs. They made financing more difficult for Harley and it was clear they wanted out. Other banks followed Citibank's lead and refused financing. Just hours before bankruptcy, a private investor saw the potential in Harley and bought out Citibank's financing at an $18 million loss to Citibank.

Lean At Harley

Something had to be done--fast and cheap. Harley put together a Lean manufacturing strategy that emphasized employee involvement, Just-In-Time delivery (called MAN for Materials As Needed) and Statistical Process Control. The plan was well thought out, well executed and successful.

At the York facility, bikes were traditionally made in large batches; MAN stabilized schedules and conditioned suppliers to deliver more frequently. Harley had previously held four weeks of stock at a cost of $25 million a year. Now it carries no safety stock; if there is a problem and parts are short, production halts.

Results

By 1986 Harley-Davidson's share of the U.S. super heavyweight market was at 33.3 percent, ahead of Honda for the first time since 1980. In 1987, one year before the tariffs on Japanese motorcycles were scheduled to end, Harley announced they no longer needed special tariffs to compete. In April 1998 Harley announced record sales and earnings--for 32 consecutive quarters of growth. As of 2007, Harley-Davidson continues to run to neck with Honda in unit sales for all categories with shares of 27% each.

These days no self-respecting yuppie or Hell's Angel wants to be seen on a Japanese bike.

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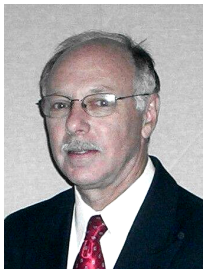

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