

# Implementation of lean systems in an organisation



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## **Abstract**

The report describes the significance of value chains, lean system, lean production, and the concepts of eliminating waste from an organisation. Following this the report also illuminates the use of lean productions and lean services in an organisation called as Baxter Healthcare Corporation which manufacture global medical products. It also enlightens the essential goals of implementing lean systems in an organisation. Primarily, a brief overview is given on Operation management. A short explanation about water value stream mapping (VSM) exercise held at a South-eastern United States facility.. Using Lean practices, sometimes integrated with an environmental focus, the company was capable to double in size and revenue while keeping its total waste generation close to 1996 levels is discussed. The Corporate social responsibility and the Porter's value chain is described in detail. And at the end a summary of the report is given.

## **Definition**

A fusion of Japanese and US management principles focusing on the reduction of: waste, inventory and customer response time.

<http://managers-net.org/Lean.html>

## **General Introduction**

In 2001, Baxter Healthcare Corporation, a worldwide leader in the manufacture of global medical products, was worried that its environmental track per unit output, a key target of efficiency, was rising. To battle this, the company adopted a congregation of business and manufacturing methods. One worked: Lean Manufacturing. As Baxter began to see waste generation

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drop with the deployment of Lean, the environmental engineering group realized that environmental enhancement was habitually an inadvertent benefit of Lean Manufacturing. In order to make best use of this benefit, this group began to hunt for ways to add additional environmental metrics and performance into traditional Lean Manufacturing tools.

By means of Lean practices, at times integrated with an environmental focus, the company was able to double in size and revenue though keeping its entire waste generation close to 1996 levels. Baxter has been so victorious at sinking waste that many of its biggest facilities are now classified as small quantity or conditionally excepted little magnitude generators under EPA's hazardous waste rules.

This learning highlights a water value stream mapping (VSM) exercise held at a Southeastern United States facility.

#### Baxter's Key Lesson Learned

Based on a value stream mapping (VSM) incident held at this provision, as well as other interconnected events, Baxter has developed a amount of key lessons for building value stream mapping work:

The targeted aspect (energy, water, materials, etc.) should be correlated to facility challenges and the company strategic plan. For example, if the facility has boilers or uses steam or distilled water, it should discover opportunities in water and its related energy. In ISO 14001 terms, the facility should be targeting one of its environmentally important aspects.

A cross-functional team is crucial to successfully identifying and understanding the challenge. Upper management support is decisive for the follow-up on implementation.

| Excellent, perfect data is also crucial. Data can be gathered in a number of creative ways, as simple as a bucket and stopwatch (water), a clip-on current reader (energy), or a portable flow meter for water discharge. Several utilities offer these services for low or no cost.

If essential, bring in expertise. If expertise is not available in-house, then utilize the various free resources that states provide, such as energy experts, water engineers, etc.

Do not rely on Lean consultants by yourself. Lean is a way of seeing and thinking, not merely a set of tools. Lean consultants can be a great source of tools and training, but a facility cannot truly learn Lean without living Lean.

The metrics selected should be proper to measure progress in the targeted processes. The team should be prepared to revise or scrap an ineffective metric.

Environmental personnel should be given the same representation and responsibilities as other staff. For example, if an operations manager has to make available a monthly report, so should the EHS officer. The environmental staff is an integral part of the team.

Baxter Manufacturing Plant, Southeastern United States

Baxter's solution plants, which manufacture flexible-container IV and peritoneal dialysis products, often use big quantities of water and energy. With steadily growing energy costs and increasing pressure on clean water supplies, these facilities are encouraged by Baxter's Corporate Vice President of Manufacturing to diminish water and energy consumption. Plants were particularly encouraged to perform a "utilities value stream map."

The plant selected for this study is one of Baxter's largest facilities. The facility has received numerous honors, including the Shingo Award for Manufacturing Excellence. In its quest for "Perfect Processes," the plant actively uses Lean practices.

Because the plant gets its water from its own wells, employees imperfectly assumed that water had slight cost associated with it, thus ignoring the energy use and costs of pumping, storing, heating, filtering, and disposing water. Baxter views water waste as a sign of other costly inefficiencies. For example, water waste is often directly tied to excessive energy consumption.

#### Creating the Current State Value Stream Map for Water

To assault the water waste challenge, managers chose to use value stream mapping (VSM), one of four key approaches Baxter uses to incorporate environmental metrics into Lean practices (see appendix). This marked the first time that VSM was used at this facility to track a material resource—in this case, water—through the entire production process. To generate the VSM, a diverse team was preferred that integrated utility and water experts as well as maintenance, production and EHS personnel. The value stream maps

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and associated implementation plans were developed over a three-day event.

The opening day began with introductions, followed by an explanation of the format and process of the VSM event. Then, the mapping began. Using sticky notes, the team graphically walked through the whole production process, highlighting water usage and major processing steps. The first pass of mapping was high-level and general; each subsequent pass would add more detail and refinement. During the second round of mapping, the major processes were wrecked down into sub-processes. Then, using the capability of the participants, the water volumes, cycle-times, value-added calculations (e. g., cost of pumping the water to the next step) and other relevant information were added to the map, with costs normalized per 1, 000 gallons. The team also listed the “ triggers” that caused each process step to initiate (e. g., an empty tank might trigger a rinsing/flushing process step).

In addition, the team emphasized dissimilarities between what must happen in theory versus the actual practices on the floor. For example, although standard operating procedure (SOP) was to rinse the floors and surface areas of certain rooms following a shift, frequently the whole room, together with the walls, was rinsed, thus wasting water. Emphasizing the dissimilarity among procedure and practice allowed waste to be better identified, with some SOPs tagged for further evaluation at a later date. The outcome of the mapping was the current state value stream map, a credible outline of the destination, use, value, and waste of the water throughout the production process.

## Metrics

The team then deliberated on which indicators and metrics to use to estimate the water usage. They understood that the accurate choice of metrics was critical to the VSM's success. The option of indicators and metrics had to be consistent with Baxter's strategic objectives as well as capable of measuring progress relative to the opportunities developed through the VSM. For this VSM, the key metrics incorporated costs (e. g., the dollar value of energy used to process the water) and water volumes. The amount of water introverted from the on-site well versus the amount of product produced was an additional efficiency metric. In addition, the team had to be equipped to adjust or reinstate these indicators and metrics if they proved ineffective in practice.

## Ranking Opportunities

Through the VSM, the team recognized and prioritized 96 opportunities, with lots of graphically represented by starbursts. These opportunities were categorized by the estimated length of time for implementation (e. g., 6 months, 12 months, 24 months) and potential for improvement. Then, they were visually plotted on a grid with the magnitude of the potential profit on the Y-axis and ease of implementation on the X-axis. After all the starbursts had been appraised on this grid, the results were transferred onto various "future state" timetables, to prioritize the opportunities and plan for their implementation. Generally, starbursts that can be implemented within 6 months require little or no capital investment (although some may require further analysis to accurately gauge potential benefits). These starbursts are

often the first priority for implementation, because of their high return on investment (ROI).

Then, the team created three future state VSMS (6 months, 12 months, and 24 months) that incorporated the prioritized opportunities. New teams were created to coordinate the changes. These teams were composed of a mix of personnel that had proper knowledge of the processes involved as well as a solid awareness of how each chosen process fit within Baxter's strategic objectives. As some members of these new teams did not participate in creating the VSMS, (for example, quality personnel) it was important to ensure that they all understood the strategy and methods behind the VSM effort. The teams developed specific timelines for implementing the changes using traditional Lean techniques, like kaizen.

### Projected Savings

At the end of the event, Baxter had an action plan that should save 170, 000 gallons of water per day and \$17, 000 within 3 months, with minute or no capital investment. The plan also eliminated the require to expand the plant's wastewater treatment plant. Also, since the event, reciprocally the head utilities manager and plant manager have been promoted to positions in the corporate office.

Because Baxter makes medical products, changes in a production process might conflict with FDA requirements. Any costs associated with pursuing an adjustment in those requirements would affect the production change's ROI, and thus, its implementation priority.



## **LONG TERM SUSTAINABILITY**

Long-term sustainability is a business thought that has gained considerable attention following revelations about global warming and dwindling natural resources. At its mainly basic level, long-term sustainability suggests that a company will progress its odds of survival in the future by ensuring that resources used by the business are responsibly managed and maintained. According to a 2010 study by the United Nations, the vast majority of corporate chief executive officers (CEOs) believe that long-term sustainability is a major factor in long term success.

The business practices that have fueled the modern global economy were not developed in a time when environmental impacts were understood or even gravely considered. During the Industrial Revolution, when huge scale business truly began to figure the globe, science had not yet developed a extensive means of measuring environmental damage. Yet while environmental science made grand strides in the 20th century, small levels of infrastructure and gaps in communications meant that information about commercial and environmental exploitation in developing nations frequently went unreported or unnoticed for years. As the global economy has developed, so too has a sincere worry for the sustainable use of resources and the practical management of the environment.

Long-term sustainability requires a broad point of view as to the impact of doing business. One of the major concerns with the concept is that regulatory measures are often vague and subject to vary. There is certainly an element of threat in long-term sustainability investing, but proponents quarrel this threat should be combated by getting involved in sustainable

practices immediately. By proving that a company is interested in protecting resources and conducting business responsibly, the owners of that company stand a higher chance of being involved in or consulted by regulatory committees that will determine future practices. The larger point of long-term sustainability suggests that, at the bottom level, people are the most essential resource. By ensuring a livable, sustainable environment for humans, companies anticipate to ensure a profitable and sustainable environment for business.

## **Corporate social responsibility**

Corporate Social Responsibility (CSR) is a conception in the business world. In the late 20th century, a growing number of corporations began to consider about their impacts on society at large, primarily because consumers became extra aware of corporate activities around the world. Many of these corporations decided to get on on Corporate Social Responsibility programs designed to counteract some of their effects on the world while also generally improving corporate practices. CSR has both fans and detractors, as one might visualize; the truth that the issue has become so publicized is viewed as a positive open by many people on both sides.

A company which has decided to establish a Corporate Social Responsibility program generally consist of a discussion of the program in its mission statement and code of ethics, making the existence of the program transparent to stockholders and other interested parties. Most corporations also contain a CSR department, which handles the company's social programs and make sure that the company's efforts in the field of Corporate Social Responsibility remain in the eyes of the public.

The possibility of a Corporate Social Responsibility program tends to be most varied. Many corporations begin at home, by trying to include conditions for their employees, with offerings like higher wages and health benefits. The next step often addresses corporate suppliers, both at home and abroad, with a focus on creating a sustainable supply chain without the exercise of child labor and other ethically questionable practices.

Many corporations also insert a charitable aspect to their Corporate Social Responsibility programs. For example, a company which sells coffee may sponsor community development initiatives in coffee producing regions, while an oil company might contribute to habitat restoration in an region historically used for resource extraction. Other companies simply contribute huge amounts of funds to charities of choice, commonly finding charities which tie in with their own work.

Fans of CSR suggest that these voluntary attempts on the part of corporations show a genuine aspiration to do business in an ethical and responsible way. Some more cynical fans also point out that corporations known for their CSR programs tend to retain employees longer and to have the pick of the crop when it comes to employees and suppliers, thanks to an interest in ethical business practices among many new graduates and small companies. Furthermore, because Corporate Social Responsibility is a growing topic of interest, companies which tout such programs frequently perform well on the market, with consumers actively seeking out their products.

Detractors trust, however, that Corporate Social Responsibility is simply a smokescreen or window dressing which coats up more egregious issues. By putting their moral initiatives at the forefront, companies can bypass a grand deal of consumer concern. For example, an automobile company may distract consumers with an ad campaign about an environmentally sustainable manufacturing plant, while continuing to produce extremely inefficient vehicles which rely on fossil fuels.

## **The Value Chain**

The term ' Value Chain' was used by Michael Porter in his book " Competitive Advantage: Creating and Sustaining superior Performance" (1985). The value chain analysis describes the activities the organization performs and links them to the organizations competitive situation.

Value chain analysis describes the activities within and around an organization, and relates them to an analysis of the competitive strength of the organization. Therefore, it evaluates which value every particular activity adds to the organizations products or services. This idea was build upon the insight that an organization is more than a random compilation of machinery, equipment, people and money. Only if these things are arranged into systems and systematic activates it will turn's possible to manufacture something for which customers are willing to pay a price. Porter argues that the capability to perform particular activities and to manage the linkages between these activities is a source of competitive advantage.

Porter distinguishes between primary activities and support activities.

Primary activities are directly concerned with the creation or delivery of a

product or service. They can be grouped into five major areas: inbound logistics, operations, outbound logistics, marketing and sales, and service. Each of these most important activities is linked to support activities which help to improve their effectiveness or efficiency. There are four major areas of support activities: procurement, technology development (including R&D), human resource management, and infrastructure (systems for planning, finance, quality, information management etc.).

The basic model of Porters Value Chain is as follows

The term Margin implies that organizations recognize a profit margin that depends on their ability to handle the linkages between all activities in the value chain. In former words, the organization is able to deliver a product / service for which the customer is willing to pay more than the sum of the costs of all activities in the value chain.

Some thought about the linkages between activities: These linkages are crucial for corporate victory. The linkages are flows of information, goods and services, as well as systems and processes for adjusting activities. Their importance is best illustrated with some simple examples: Only if the Marketing & Sales function delivers sales forecasts for the next period to all other departments in time and in reliable accuracy, procurement will be capable to order the necessary material for the correct date. And only if procurement does a excellent job and forwards order information to inbound logistics, only than operations will be capable to schedule production in a way that guarantees the delivery of products in a timely and effective manner - as pre-determined by marketing. In the outcome, the linkages are

about seamless cooperation and information flow among the value chain activities.

In most industries, it is rather unusual that a single company performs all activities from product design, production of components, and last assembly to delivery to the final user by itself. Most often, organizations are elements of a value system or supply chain. Hence, value chain analysis must cover the whole value system in which the organization operates.

Within the entire value system, there is only a definite value of profit margin available. This is the dissimilarity of the final price the customer pays and the sum of all costs incurred with the production and delivery of the product/service (e. g. raw material, energy etc.). It depends on the configuration of the value system, how this margin spreads across the suppliers, producers, distributors, customers, and other elements of the value system. Every member of the system will utilize its market position and negotiating power to get a higher proportion of this margin.

Nevertheless, members of a value system can collaborate to improve their efficiency and to decrease their costs in order to accomplish a higher total margin to the benefit of all of them (e. g. by reducing stocks in a Just-In-Time system).

A typical value chain analysis can be executed in the following steps:

- Analysis of own value chain - which costs are related to every single activity

- Analysis of customers value chains - how does our product fit into their value chain
- Identification of potential cost advantages in comparison with competitors
- Identification of potential value added for the customer - how can our product add value to the customers value chain (e. g. lower costs or higher performance) - where does the customer see such potential.

## **Conclusion**

Baxter Healthcare Corporation provides solutions to help other organisations to manage their changing accommodation requirements. Its global medical products are put together using lean production methods.

Lean processes provide an environmentally-friendly approach in a world of scarce resources. Materials are used more effectively. Time is used more efficiently. Less waste is generated at every stage of lean production. Baxter Healthcare Corporation global medical products can be put up very quickly. Problems associated with conventional new products a key target of efficiency rising has been eliminated. The net effect is a win/win/win situation for Baxter Healthcare Corporation its customers and the environment.