

CYCLE TIME REDUCTION

A Capability-Enhancing Approach To Cost Reduction

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Cycle Time Reduction is an under-used and valuable addition to any company's business improvement toolbox. It provides a different perspective that may open up significant new working capital and cost reduction opportunities in areas of a company's operations that are often missed using other cost reduction approaches. More important, cycle time reduction is an approach to business profitability improvement that enhances a company's capability to use time as a strategic weapon to compete and win in intensely competitive global markets.

There are many avenues to improving profitability, including:

- Increasing prices and/or sales volume
- Reducing costs (labor, materials, distribution, eliminating waste and rework, etc)
- Reducing investment intensity (raw materials, finished and WIP inventory, receivables etc)
- Improving core business capability, which leads to price strength, improved customer loyalty, and long term market share growth

Establishing the optimal balance among these and other strategies to enhance profitability obviously represents one of the more important decisions an organization faces. SatiStar's consulting experience across a wide range of business environments has led us to conclude that many organizations lack balance and diversity in their overall cost reduction approach. Cost reduction programs, for example, often exclude the use of powerful yet simple approaches.

In this article, we would like to review an incredibly effective, yet underutilized approach: cycle time (c/t) reduction. We will show, both conceptually and by example, how cycle time reduction simultaneously addresses profitability on three fronts: revenue enhancement, cost reduction, and investment reduction.

We will also describe a demonstrated C/T reduction methodology and those factors we believe key to the achieving breakthrough results.

The Cost Reduction Approach

Many organizations have seen their profitability impacted by global competition, or by large and powerful customers who are able to demand and get annual cost reductions. Their response has often been to focus on achieving higher labor, raw material and machine efficiency levels, as well as higher quality levels, to remove the fat and waste from their core manufacturing operations. There are many proven methodologies for achieving these quality and efficiency improvements, but implementation time frames are often lengthy.

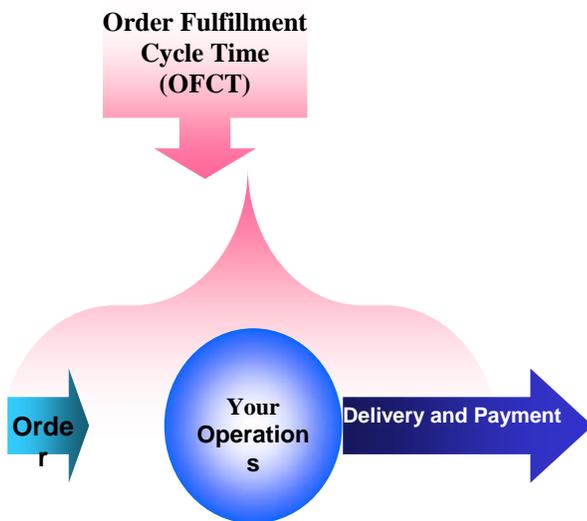
Faced by continually increasing cost reduction pressure, companies may be forced to deliver price reductions that are not matched by their ability to achieve real cost savings. In the worst case, companies begin to remove the muscle and bone from their organizations through downsizing, rightsizing, and other initiatives that sap employee morale and diminish the core capabilities that made them successful. The business enters into a siege mentality. It becomes an unhappy place in which to work, a place with few prospects, little security, and a limited ability to compete in the future.

The Cycle Time Reduction Approach

Cycle time reduction is inherently different from traditional cost cutting approaches to profit improvement. *It enables rather than diminishes an organization's ability to compete, by strengthening a company's core capabilities and by developing the dimension of time as a new strategic weapon.* Slashing cycle time is the fastest and most powerful approach to profitability improvement, especially for companies who have already realized most of their core manufacturing

efficiency improvement opportunities. Cycle time reductions will directly impact almost every contributor to costs within your operations. As cycle time is reduced:

- Investment in finished goods, WIP inventory and financing of receivables decreases.
- New market opportunities based upon order fulfillment speed and flexibility are enabled, pricing can be strengthened, and customer loyalty enhanced in existing segments through improved service capabilities
- Fewer changes to orders and production schedules mean achieving higher manufacturing efficiency levels
- Operating costs decrease, and expediting, overtime, and other costs associated with “rush” orders are eliminated
- Write-offs on raw materials, WIP or finished goods inventories are reduced, as there is less damage during storage, and less risk of obsolescence.
- Quality problems are detected and resolved earlier, as inventory turns are increased.



OFCT: A Key Business Improvement Metric

Order Fulfillment Cycle Time (OFCT) is defined as the number of hours, days, weeks or even months that elapse from the time when your **customers place an order** to when you finally complete delivery **and receive payment**. This improvement concept applies equally well to manufacturing and service businesses.

For most manufacturing organizations, the actual process “machine time” where value is being added tends to be measurable in minutes or hours, and may represent less than 5% of the total OFCT.

For example:

- A brake shoe manufacturer may quote delivery lead times of a month for special orders, where the actual machine time is less than 20 minutes.
- Revenue Canada takes weeks to deliver a tax refund, where the actual return processing time is a few minutes.

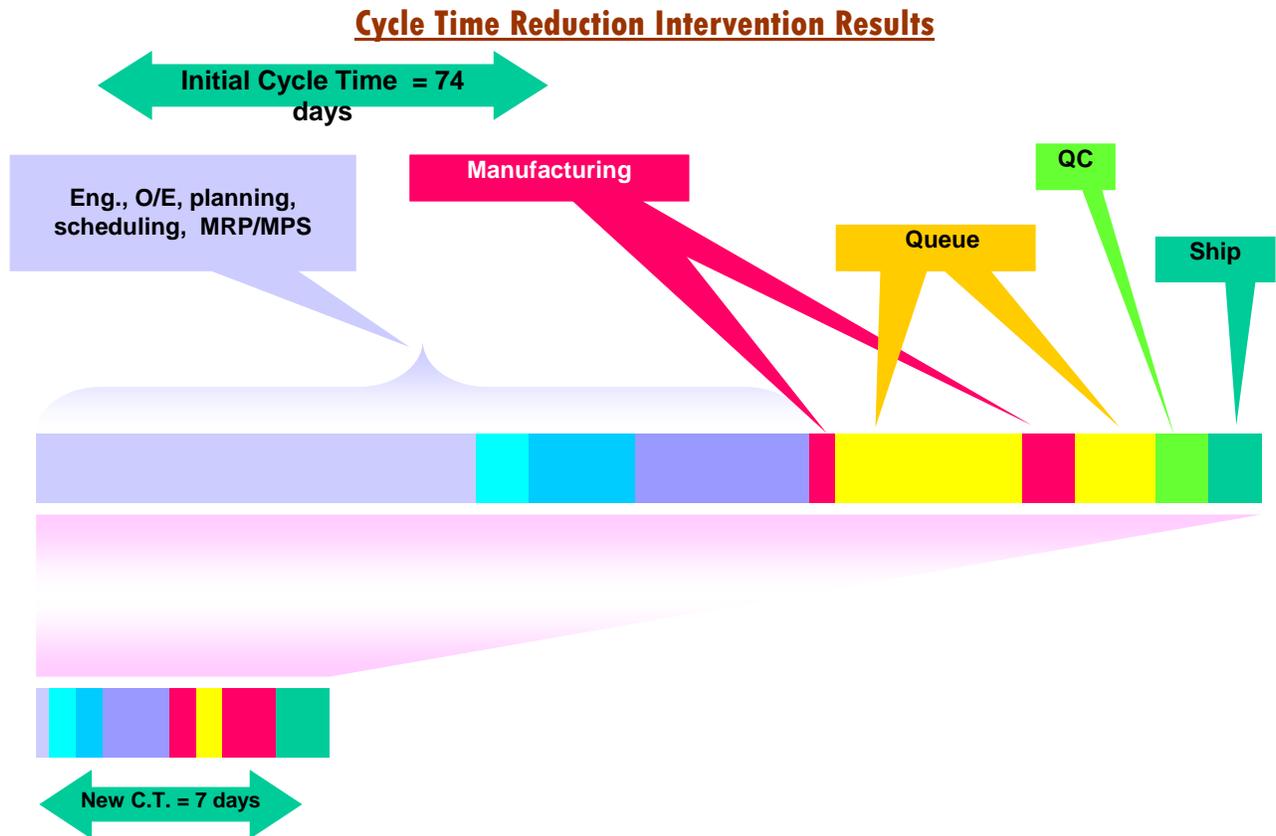
The benefits in using this business improvement metric quickly become obvious. OFCT as a business improvement reference opens up your entire business operations to scrutiny and improvement, including the 95% of those opportunities for business improvement that a focus on “machine time” efficiency would miss.

The broader you cast your net looking for profit improvement opportunities, the more great opportunities you are likely to find, and the more dramatic the improvement that you are likely to achieve. As a corollary, even if you achieve a 90% reduction in “machine time” it is a cycle time component that typically represents only 5% of the overall OFCT, such that the maximum overall impact achievable is a mere 4.5%

C/T Reduction: Examples of Actual Results

The cycle time reduction example below illustrates actual results SatiStar achieved with an automotive industry client: cycle time (excluding days receivable) dropped from 47 days to just 7 days. Improvements of this magnitude are not unusual. In another intervention, an examination of the OFCT highlighted a major opportunity upstream from the core manufacturing process.

In three weeks, a detailed process design and detailed rollout plan was created, approved and kicked off that slashed cycle time from 18 days to just 4 hours without the addition of any labor or capital equipment. \$400,000 in annual overtime costs were eliminated while allowing a one-time increase in working capital by \$22 million and an inventory reduction of \$11,500,000.



The red bars above represent the cycle time for core manufacturing operations in both the “before” and “after” process for this real life example. The core manufacturing cycle time remained essentially unchanged. All of the significant cycle time improvements were generated through improving cycle times within the engineering, order entry, planning, scheduling, MRP/MPS, WIP queues, and Q.C. steps. The results from this particular intervention are typical. The overwhelming contributors to cycle time are usually in the support activities (order entry, scheduling, logistics, engineering, quality control, etc.) that surround the manufacturing process, and this is the area where dramatic improvements are possible. Contrast this improvement, achieved over 5 months, with the three-year time frame and significantly higher investments required for manufacturing process improvement.

Product Development: Where Cycle Time Rules!

A physicist would claim that time proceeds at the same pace for everyone, but clients who are engaged in time-sensitive pursuits in the worlds of E-commerce and product/process development have a different perspective. For these people, time really is money, and they never seem to have enough of it! A Product Development Cycle Time (PDCT) improvement for one of our clients reaped major revenue enhancement rewards. PDCT was slashed by 65%, while increasing design throughput 77% with no additional resources. In this particular project, the streamlined design included the implementation of a product development management control system based on Japanese automotive industry benchmark systems. The new product development management control system systematically reduced launch risks and helped meet aggressive launch cost, quality, and delivery targets for the first time.

Cycle Time Improvement Methodology

The following four step methodology for cycle time reduction is simple yet effective and able to deliver rapid, dramatic and sustained results. The basic steps are:

1. **Conduct a detailed improvement opportunity assessment** that identifies, quantifies and prioritizes the potential gains, and provides an approach to realize each of the identified opportunities, including how best to deploy your personnel.
2. **Create and design solutions to address those improvement opportunities** that will have the maximum return. Solutions generated address opportunities from the perspective of the overall high-level process, to avoid sub-optimizing your business process.
3. **Develop detailed implementation plans** for the improvement opportunities based on the conceptual design. At this stage we also develop a highly visible project performance measurement and tracking system that will ensure results. This way you'll be able to directly measure our performance.
4. **Provide implementation coaching and guidance** for the designed solutions.

Old Tools In Unusual Applications: DOE for Days Receivable Reduction

Although successful cycle time reduction projects employ a standard improvement methodology as described above, we often use a variety of supporting tools, both traditional and/or unusual, to help achieve spectacular results. In one case, the challenge was to reduce the order fulfillment cycle time, as measured by days sales outstanding (DSO). Design of Experiments (DOE) methodology identified the key factors that contributed to increases or decreases in receivables DSO. In addition, DOE provided a measure of the importance of each factor's contribution and relative interactions.

This analytical tool enabled all these contributors to DSO to be simultaneously optimized, and management resources to be focused on just the contributors to DSO that were most important.

The client was also able to divert significant resources by eliminating those practices that were shown to be ineffective or even counterproductive in terms of reducing DSO. In all, this C/T project identified opportunities that would allow the client to reduce the current receivables measured as DSO, from a level of 63 days, by 12 days. A change in company ownership caused a halt to the project before all the recommendations were fully implemented. Even so, *the client achieved a reduction in DSO of 6 days, and has sustained that new DSO level for years afterward, without the need for any capital expenditure or the need for additional clerical help.*

The Importance Of An Outside View

Dramatic reductions in cycle time are best achieved by experienced cycle time reduction consultants who are brought in from outside the client organization, as well and from outside the industry in which the client competes.

Outside expertise is needed to assure that the methodology used is first class, that the process doesn't drift or deteriorate, and that a wealth of pertinent experience and examples are provided to the improvement team. An outsider status helps to assure that everyone's needs and interests will be fairly considered. It will also signal that even the company's most sacred cows will be challenged. An internal employee, whether an expert facilitator or not, would find it much more difficult to maintain a stance of total impartiality and political neutrality, while standing in front of senior managers and seriously challenging policies to which individual egos and careers are attached.

Even if your internal facilitator has no fear of his involvement becoming a career-limiting move, he still must face another huge hurdle that an external consultant does not face. Rejection of self-imposed and obsolete constraints is exceptionally difficult if you have worked within those same constraints for any period of time. Constraints are so pervasive and powerful, that we often don't even realize when we are facing a real constraint, or a constraint that is self-imposed.

Cycle time reduction consultants must not have preconceived ideas of what the final result will look like. They must be prepared to challenge everything—including company and industry accepted wisdoms and constraints. When constraints are not thoroughly challenged, the creative process becomes little more than thinking within a slightly bigger box instead of ‘out of the box’ thinking. Marginal improvement results are usually the result.

To give another example of the value of an outside view, a client maintained inventories with a stable accuracy level in the range of 72%, which was a little above average for his industry. Within the client’s organization, the accepted wisdom was that business constraints would not allow for significant improvement in accuracy levels. By benchmarking the company’s inventory management process versus an industry where inventory accuracy was routinely maintained at >99.9999% these self-imposed constraints were challenged, then eliminated. The client introduced and used the newly introduced concepts from the best-in-class industry to achieve inventory accuracy better than 99.2%, as well as a significant competitive advantage.

Surprisingly, you may want to stay away from those consultants who specialize in a narrow industry niche—especially if that niche is yours. It’s a matter of missing the forest for the trees. We all tend to focus on what we do best, and an industry consultant who’s strength is in a particular aspect of a process will likely miss good opportunities by focusing too much on the small detail within his specialty. Cycle time reduction improvements are most often found by focusing on the bigger picture: at process interconnects, or in the sequencing and elimination of existing process steps, rather than in the nuts and bolts of a specific machining step. If your consultant is accustomed to counting trees, he may not have the vision to see the whole forest.

Summary

Cycle time reduction interventions, if well done, routinely provide rapid and dramatic breakthroughs in cost reduction and working capital reduction. Costs hidden to other cost reduction techniques are routinely identified and eliminated.

Equally important, the ability to compete using the dimension of time is effectively addressed head-on. What additional orders could your company secure if you could offer delivery times that are days or months better than the nearest competition? What additional markets could you access, if the time needed to ship your products overseas was more than compensated for by a shorter order fulfillment cycle in other areas? Are there customers who will pay a premium for speedy delivery? At the end of a typical cycle time intervention, customer needs are better met, costs have been significantly reduced and the capability and flexibility of the company have been enhanced.

Mickey Jawa is the CEO of SatiStar Management Consulting, and has over 19 years of experience in process engineering, manufacturing management, and Total Quality management in a broad range of industries. He has assisted companies worldwide in implementing Total Quality, and in Business Process Reengineering. Mickey is an expert in advanced statistical quality improvement techniques, including SPC and DOE. He is one of the world’s leading experts in Business Process Reengineering, especially in the area of cycle time reduction. Mickey is a leading authority on Total Quality, and has served as the Chairman of the Conference Board of Canada’s prestigious Council on the Management of Total Quality.

Mark Lefebvre, an Executive Vice President with SatiStar Management Consulting, starting as a chemist, has held managerial and executive positions over a 20-year career in the chemical and automotive industries. Leveraging from considerable time spent in Japan working and studying business and quality systems and practices, Mark achieved breakthrough improvements in North American operations. Areas of expertise include the Toyota Production and management planning systems, the design and implementation of ultra-high performance quality systems, and training on a wide range of subjects. Mark has served as a member of the Conference Board of Canada’s prestigious Council on the Management of Total Quality.