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Work Lean to Control Costs

It's a mistake to assume that management accounting systems are necessary to control and evaluate shop-floor operations

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In a May 1989 article in *Manufacturing Engineering*, I advocated the use of new activity-based management accounting tools to remedy the deficiencies of traditional management accounting systems. I wrote that article just two years after my co-authored book *Relevance Lost: The Rise and Fall of Management Accounting* first put these new accounting tools on the map. I was at the peak of a long career teaching and writing about management accounting, and I felt that I had solutions to some of the thorniest problems manufacturing managers faced. I couldn't have imagined the complete turnaround my thinking would take in scarcely more than two

years after that article appeared.

Ironically, perhaps, the change was prompted by manufacturing engineers I met on the talk circuit, who suggested that activity-based accounting addressed the wrong problem. They said that activity-based costing addressed an accounting problem; namely, how to more accurately trace overhead costs to products and departments. While they saw nothing wrong with improving product cost information, they thought that I might do better by studying new ways of organizing manufacturing operations that could sharply reduce or even eliminate most of the overhead costs that were the reason for activity-based costing—indeed, any form of cost accounting—in the first place. When I asked them where I could learn more about these new ways of organizing operations they said, "study Toyota".

In a very short time, I read everything in English I could find about Toyota, and I interviewed many consultants who had studied Toyota in Japan. Because my background up to that time was entirely in accounting and economics, not operations or engineering, I'm sure that I did not understand all of what I read and heard. But I learned enough to come out in 1992 with a new book, *Relevance Regained: From Top-Down Control to Bottom-Up Empowerment*, in which I argued that it was time to stop overselling activity-based management accounting and turn, instead, to learning about the methods that enabled Toyota to produce superlative results without needing either management accounting control systems or traditional production control systems such as MRP.

That 1992 book brought an invitation from Mr. Fujio Cho, then president of Toyota's North American operations, to visit Toyota Motor Manufacturing Kentucky (TMMK, Georgetown, KY). Over the next decade I was privileged to visit TMMK on scores of occasions when I was allowed to work on kaizen

teams, participate in TPS training, and interview employees in virtually every department of the plant.

Among the insights I gained from that unique experience, none was more significant than to see world-class manufacturing operations run with no intervention from the company's accounting department. I saw firsthand that, just as Toyota does not allow external production controls on the shop floor, the company also does not allow external management accounting controls there either. I came to understand how it is that the information needed to conduct current operations is inherent in the work itself, and the work itself provides all the information needed to control and assess operations.

This new understanding made the message in my 1989 *Manufacturing Engineering* article seem woefully inadequate! Thus, I welcome this opportunity, after 16 years, to give a revised and updated message to the guild of manufacturing engineers whose members helped me see the world in a new light after that article appeared.

The new message is this: I believe that the number one enemy of good management in American manufacturing is a widespread assumption that management accounting systems are needed to control and evaluate operations on the shop floor. In fact, the current wave of interest in "lean" manufacturing has attracted a large following of accountants who are promoting what is called "lean accounting." Not all of what they advocate is bad, but much of it resurrects old ideas about management accounting that, if carried too far, will impair sound operations.

To present an opposing position, I will list in the remainder of this article a number of ways, *without using quantitative data*, that one can identify and judge operations to be truly lean (i.e., designed according to the best practices observed in Toyota's plants). In particular, I list below several ways that one can truly see lean and know that what is seen is really it.

- *Lean is about viewing operations in the present moment, not with*

delay, and in a specific, concrete place, not in an abstract context removed from the site of the actual work.

In contrast to this, American managers customarily "see" operations after the fact, through abstract financial or quantitative data in computer reports and quantitative analyses. In large part this situation is due to their propensity, nurtured by years of schooling, to see operations through the lens of abstract models and quantitative data. This propensity may go a long way toward explaining why American businesses have had so little success adopting and implementing "lean" practices. American managers are not inclined, nor educated, to see the world concretely, in the moment. They are better equipped to deal with the world in abstract terms than in the more concrete terms required to conduct lean operations.

But American businesses must begin to connect with the concrete and the real—and soon—if they are going to survive. People in the business world who would like to change must shift attention from the abstract to the concrete. As an example of what I mean, my first introduction to Mr. Cho, on my first trip to the Georgetown plant in 1992, was while touring a welding line where he had joined team members in a workstation that was using a new form of welder he was anxious to see in action. I learned later that Mr.Cho often joined workers on the line. This behavior stands in sharp contrast to the situation in a typical large American manufacturing company, where one would expect to see the president or other top executives in a distant office poring over computer-generated spreadsheets, but never suiting up to work on the line.

- *Pressing employees to achieve average unit cost targets, a practice widely used in American manufacturing organizations, is not likely to create a stable system that operates in control.*

For more than half a century, the renowned quality guru W. Edwards Deming made this point repeatedly to American manufacturers. Chasing average unit costs by driving up output rates—or by reducing headcount—is

a proven way to increase total costs. The problem is that average unit cost is an abstraction, far removed from the reality of the operations where resources are consumed by workers and machines in live operations. To center one's concern for costs on the concrete reality at hand, one must focus on total cost, not unit cost.

This is one of the most distinct differences one observes between a Toyota plant and equivalent plants run by American companies. Toyota pursues low *total costs*, but never uses *unit costs* as a metric to drive operations. American organizations, however, will drive operations managers to pursue average unit costs by evaluating departments with standard cost variances. The difference in these two approaches to cost management is that chasing average unit costs invites employees to focus on output produced, whereas pursuing low total cost, as Toyota does, invites attention to consumption of resources.

Topic	Lean Mode	Traditional Mode
OPERATIONS	- VISIBLE IN THE MOMENT - MANAGEMENT FOCUSES ATTENTION ON CONCRETE AFFAIRS	- SEEN WITH DELAY - MANAGEMENT FOCUSES ATTENTION ON FINANCIAL ABSTRACTIONS
COST MANAGEMENT	- PURSUE LOW TOTAL COST - REDUCE CONSUMPTION TO REDUCE TOTAL COST	- CHASE AVERAGE UNIT COST - INCREASE OUTPUT TO REDUCE AVERAGE UNIT COST
PRODUCTION CONTROL	- CONTROL IS INHERENT IN THE WORK	- CONTROL ACHIEVED THROUGH AN EXTERNAL COMPUTER SCHEDULING AND ROUTING SYSTEM (E.G., MRP)
COST CONTROL	- BUILD RELATIONSHIPS TO CREATE A TRUE SYSTEM	- IMPOSE EXTERNAL TARGETS ON EACH PART AND ASSUME THE WHOLE EQUALS SUM OF PARTS

Attributes of lean and traditional modes of operating a manufacturing organization

Producing more and more output to reduce average unit costs is a time-honored pathway to excess, delay, and abnormal variation—prime drivers of higher total cost. But viewing total cost in terms of the resources consumed in each and every moment, in each and every step, as Toyota's system

does—one order at a time—leads to lower total costs, higher quality, lower lead times, and greater flexibility. Ironically, Toyota's approach to managing total cost focuses on the *concrete unit of output* in each and every workstation at every moment, whereas the American companies' focus on average unit cost targets shifts attention to an abstraction far above the local workstation or cell level where the resources are consumed that cause cost. This outcome is seen even with regard to resources consumed by so-called capital assets, where Americans pursue large scale and high output rates to achieve low unit costs, while Toyota shifts attention from scale, speed, and output rates to "right-sizing."

** External systems for production control and management accounting control are standard fare on a traditional American-style batch-and-queue shop floor.*

There one sees managers using standard-cost budget variances to motivate the behavior they hope is sufficient to achieve financial targets. Such external control systems disappear, however, when a company conducts customer-pull continuous-flow operations as one sees in a Toyota plant. In the continuous-flow setting, these controls are inherent in the work itself. As for production control, the customer pull sets the schedule in the Toyota plant, and standardized connections and pathways among workers and machines provide all the necessary information for routing material. Cost control is maintained by everyone adhering to standardized work, and immediately reporting and rectifying abnormalities whenever and wherever they occur. Deviations from expected cost will be visible to people on the Toyota floor long before accounting evidence is available to signal such a development.

- *Why do American managers of manufacturing companies think they must control operations? They think that way, presumably, because they view any operation as a collection of independent parts having*

no internal, intrinsic spirit to guide its destiny.

To accomplish some goal or purpose, supposedly the parts must be combined according to an externally enforced design. That is the purpose of the control system. However, American managers seem to feel a need for external cost and financial controls more strongly than they feel the need for production controls. This is evident today in the new interest that American accountants are showing in "lean accounting." They understand well and they readily accept that a Toyota plant operates without an MRP system to release work to the floor and to route it through the relevant processes. But they still seem compelled to create systems that might replicate in a "lean" setting the traditional cost controls that American companies have used for decades.

This difference in attitude between production and financial control systems is perhaps understandable, because the production controls they see in a Toyota plant, achieved by customer-pull scheduling and kanban replenishment, are concrete, immediate, and visible. American accountants readily see how internal features of the work process itself replace any need for external computer scheduling. But they find it much more difficult to see the internal features of the work that enable a Toyota plant to control cost without any need for external financial controls. Toyota achieves that cost control, of course, by the way they design work processes so as to insure that every employee at every moment sees exactly, and focuses on, what must be done to complete just one order at a time.

- *A key difference between lean Toyota-style operations and the traditional operations seen in American manufacturing plants is that results in the lean setting arise from careful and patient building of relationships.*

In the traditional American setting, managers strive to achieve the best overall results by running each and every part of the system as efficiently as possible, without regard to the connections between one part and another. In

a real sense, this means that the American plant will end up stressing or sacrificing parts to achieve overall financial targets, whereas the lean plant strives to operate every part in the spirit of a balanced and integrated whole. This holistic approach is the difference between seeing the whole as a mechanistic sum of parts and seeing the whole as an emergent feature of relationships among a living system of parts.

- *These two approaches to conducting operations differ greatly in how they manage abnormalities, errors, or defects.*

In traditional American-style operations, an error is the fault of an individual person or machine, to be detected by inspecting work after it is done, away from where and when it was done. In lean operations, by contrast, an abnormality is immediately visible to someone as soon as it occurs and where it occurs. Having people see and remedy abnormality promptly is an expected part of the work in the lean setting. Moreover, an abnormality in the lean case is not seen as an individual's fault, but as a consequence of a breakdown in the pattern of relationships inherent in the work. It is in the system, not in the person.

This list of ways to see lean, and know you are seeing it, is not exhaustive. But it's long enough to show that one can identify and judge operations to be truly lean without using any quantitative metrics to do so. The attributes of a manufacturing organization's operations identified here provide a more powerful lens than any table of metrics to see if those operations do or do not follow the principles observed in the Toyota system.