The System Management Business Model

CONSTRAINTS MANAGEMENT SYSTEMS INC.

Every improvement is a change, but not every change is an improvement. This saying has been circulating around business for many years and is the fundamental reason for so many different approaches to business improvement such as LEAN Manufacturing, Six Sigma, Process Re-engineering, TQM, and more. Almost every company we know is taking some sort of action to change the way it does business, but unfortunately, many of those changes don't translate into an increase in the bottom line. Why not? In our opinion, too many approaches to improvement are just about change. To better understand this claim, we provide an analysis of the two primary categories of improvement approaches in business today – the Mechanistic (or traditional) Approach and the Systems Approach.

Mechanistic vs. Systems Approach

The Mechanistic Approach to business management and improvement has its basis in the Realist View of the world – "…a cent plus a cent plus a cent will accumulate to a fortune…" In other words, the global improvement is the sum of many different local improvements. The Systems Approach to business improvement and management more closely follows the principles of Archimedes – "… if I find the leverage point, I can move the earth…" In other words, the global improvement may not necessarily be equal to the sum of many different local improvements. Instead, to improve the business, you might need to find its leverage point and focus the improvement there.

The Mechanistic Approach

To which approach you subscribe (Mechanistic or Systems) fundamentally depends on how you view a business and how people behave inside a business. Organizations that operate according to the Mechanistic Approach to business management and improvement perhaps view a business like a machine of individual parts that each perform a separate function that together perform a whole function. We claim this because the best way to fix or overhaul a machine is often to break it into its component or manageable parts, fix each of them, and then put it back together. Likewise, many companies that we come across are in the middle of a large scale enterprise wide transformation where all of their departments are trying to separately improve the way they function. It is as if someone somewhere performed a diagnosis of the business and determined that if each department improves on its own, the whole company will improve.

The primary problem with the Mechanistic Approach to business management and improvement is that today's businesses are often very complex and made up of many different inter-related and interdependent departments. Given these facts, trying to improve every part of each department of any company is time consuming, expensive and extremely challenging to coordinate. Not to mention that an improvement in one department often leads to a big problem in another. Have you ever seen or heard of any one of the following:

- In an effort to reduce material cost, the purchasing department switches vendors which leads to a longer lead time to secure the part resulting in a manufacturer's inability to supply on time.
- A reduction in the number of crews manning a particular department leads to the inability to meet a surge in customer demand resulting in either increased overtime costs or excessive freight costs to supply on time

In our experience with the Mechanistic Approach to business management and improvement, the results take too long to achieve, too much effort is required for limited results and the real problem limiting the business from greater profitability is never leveraged, as too many resources are improving in too many places. The good news of the Mechanistic Approach is that if the business manages to improve all the parts, the whole business will most likely improve – but at what cost?

The Systems Approach

The Patient Analogy

The Systems Approach to business management and improvement views a business as an organism of interconnected and interdependent parts - just as the human body is an organism of parts. If the body starts to feel ill and exhibit symptoms of muscle pain, chills, cough, and fever, the patient concludes that he/she has a problem. After treating each symptom with a specific remedy of aspirin, rest, cough syrup and cold medicine with no improvement, the patient often seeks the doctor's advice as to the root cause of the illness. The doctor's diagnosis of the illness leads to the conclusion that the patient has pneumonia. The doctor then explains to the patient that the pneumonia creates the fever which leads to the chills; also the pneumonia creates the cough which leads to the back ache. After explaining the cause-and-effect of the root cause to the prevailing symptoms, the doctor then prescribes the remedy to cure the root cause – in this example, antibiotics.

Likewise, the Systems Approach to business management and improvement doesn't break the business down into manageable chunks and treat the symptoms. Rather, the Systems Approach seeks to understand the cause-and-effect relationships between each of the business problems (symptoms) and drives back to the root cause of what limits the business' improved profitability. This often unidentified root cause or leverage point is the area of the business, which if all the improvement efforts were focused on, often leads to dramatic and quick bottom line increases.

The Chain Analogy

To further elaborate on this point, consider a world where a business is like a chain. The Mechanistic Approach to improving the chain would be to focus on improving each link of the chain. For there to be any benefit to improving each link, the primary measurement must be weight, therefore, if each link were improved, the whole chain would improve. Contrary to this, the Systems Approach to improving the chain would focus first on identifying the weakest link of the chain and focus its improvement on this weakest link. For there to be any benefit, the primary measurement must be strength, therefore, only one link needs to be improved to improve the whole chain.

Weight vs. Strength

Bringing the analogy back to the real world, is the primary measurement of a real business that of weight or strength? We claim that it is strength not weight. If the primary measurement was more like weight, then any improvement to any department would result in an increase in Net Profit (from either a decrease in cost or an increase in capacity to process more sales). Since we know that this is never the case, then the answer must be strength. Let's test the assumption. If we are able to identify where a company's weakest link is and we are able to strengthen it, will the company's net profit most likely increase. Of course!

Two fundamental questions arise from the Systems Approach to business management and improvement. First, how do we find the few leverage points that will allow the business to develop an Exponential Profitable Growth™ strategy? Second, how do we manage the business as a system and ensure that all of the parts are synchronized to exploit the leverage points? (Especially as the organization continues to grow and change.)

The Five Focusing Steps

The answer to the first question is found in Dr. Eliyahu Goldratt's work on developing and implementing the Theory of Constraints (TOC). Dr. Goldratt developed TOC in the early 1980s as a new business management philosophy that provides companies with the tools and techniques to manage their business as a system. Dr. Goldratt, a physicist by training, discovered that any business could be adequately described and improved through the application of both management and hard sciences (physics and math logic.) CMS' approach to assisting clients develop their Exponential Profitable Growth™ strategy is based on TOC.

One of the tools developed by Dr. Goldratt for finding a company's few leverage points is the Five Focusing Steps of ongoing improvement. The steps are as follows:

- Step1 – Identify the system constraint
- Step 2 – Exploit the system constraint
- Step 3 – Subordinate all else o the above decision
- Step 4 – Elevate the system constraint
- Step 5 – go back to step 1

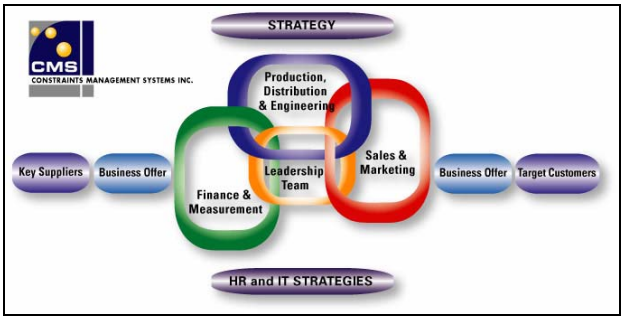
These five simple steps have allowed many companies to achieve significant profitability growth with minimal effort.

The System Management Business Model

The second question on how to manage the business as a system to ensure the synchronization of all the parts is assisted by understanding and deploying CMS' System Management Business Model™. The SMBM was developed in order to translate the

conceptual notion of managing a system as a business into tangible actions that allow managers to understand how their behaviours need to change.

The SMBM is comprised of two sub-systems – internal and external. The Internal System consists of Operations (production, distribution and engineering), Finance and Measures, and Sales & Marketing - supported by both the Human Resource and Information Technology functions. The External System consists of the Business Offer to Customers and the Business Offer for Suppliers - to as many links in the supply chain as required. Finally, the company's Leadership Team is supposed to define how the Internal System will interact among themselves, as well as with the External System.



In a traditionally run company, based on the Mechanistic View of business, most businesses run under the some (or all) of the following primary operating principles:

Operations (Mechanistic Approach)

Production

The primary operating principle of production is to keep material, manpower and machines as busy as possible. In addition, the primary measurement is work centre efficiency. A common belief is that the best product for the business is the one that utilizes the business' resources with long runs and few set-ups. In summary, the traditional approach to managing production revolves around the assumption that a resource standing idle is a major waste.

Distribution

The primary operating principle of distribution is that the best way to manage inventory is to improve the accuracy of the forecast because replenishment times will always be too long. In addition, the best way to service the customer is to push inventory as close to the customer as possible.

Engineering

When looking upon the engineering function as it relates to product development, process engineering and project management, the primary operating principle is often the sooner we start a new project, the sooner we will finish. In relation to cost management, the assumption is often the best way to reduce a product costs is to reduce the processing time it takes to make it. Finally, a widely held belief is that the process engineers and maintenance department should strive to reduce machine downtime everywhere.

Finance & Measures (Mechanistic Approach)

In many companies we see, the finance function spends a tremendous amount of time and resources trying to understand which products make the business the most money by allocating all costs (variable and fixed) to products as precisely as possible. This activity leads them to the belief that the best way to maximize company net profit is to maximize contribution margin per product - concluding that products with low contribution margin lose the company money. For example, some

clients we have worked with had an internal contribution margin threshold of 20%.

Sales & Marketing (Mechanistic Approach)
Leading edge traditional companies often believe that the best product to sell is the one with the highest Contribution Margin (or highest total contribution dollars). In addition, many companies believe that an effective way to get more volume is to compete primarily on price versus strive to increase the customer perception of value for the product or service.

Also, in many companies we see, there is often an imbalance between the business sold by the sales force and where the plant has available capacity. After long drawn out and fruitless discussions with the Sales & Marketing executives about whether or not the company should respond to the market or the company should shape what the market wants, most executives agree that too many sales people act as if any sale is good for the company - even if it compromises plant capacity.

Role of the Leadership Team (Mechanistic Approach)
All too often, we come across companies that operate according to the belief that the best way to optimize the company's performance is for each departmental leader to optimize their department's performance. In fact, these companies often have well developed strategic and operational plans full of activities and well defined projects so that each department can be as good as possible.

Business Offer to Customers (Mechanistic Approach)
When it comes to the Business Offer that many companies make to their customers, fundamentally, most of them are saying the following: the best way to maximize sales is to insist customers place Purchase Orders well in advance of need (according to their forecast), for quantities much larger than they need (according to the company's Minimum Order Quantity) and take the product even if they don't need it. Strange to see it written so blatantly, we know, but when you look closer at these policies, most companies offer their customers a win-lose proposition.

Business Offer for Suppliers (Mechanistic Approach)
Some of the well ingrained operating principles for dealing with suppliers include: the best way to manage a supplier is to batch their purchase requests according to the company's Economic Order Quantities, to not allow a supplier know how much inventory of their product the company has, to not allow a supplier know the company's customers consumption of the supplier's products, and to delay payment to the supplier as long as possible. In addition, many businesses find it important to measure their suppliers according to a strict scorecard so that they can punish them when they don't achieve certain standards.

HR and IT Strategies (Mechanistic Approach)
Many companies are very busy implementing HR Systems and ERP systems. There must be a common operating assumption behind most of these activities that says that best way to improve the performance of these functions is to automate the most administrative and clerical functions. For example, HR Systems usually focus on automating payroll, employee records, compensation admin. etc. while ERPs usually start their implementations in the finance area implementing the General Ledger,

Accounts Payable, Accounts Receivable and Financial Statements modules.

Strategy (Mechanistic Approach)
Admirably, the strategies of many companies we have seen are well defined and focused on their target markets and core competencies. Also, each executive usually has a long list of improvement projects that he/she needs to implement in order to support the overall business strategy. However, only very few companies have actually defined a strategy for how all of the components and departments should synchronize around the company's key leverage points. Usually, it is because these companies don't know where the leverage points are nor how to synchronize them!

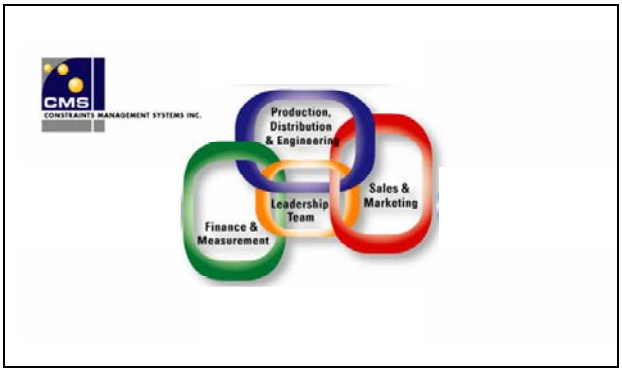
A critical element that is lacking in all of the above primary operating principles for managing the various business functions is that there is no mention of a leverage point or constraint that each function is synchronized around. ***In other words, the primary operating principles in traditionally run (mechanistic) organizations are focused on managing and improving the weight of the chain not the chain's strength.***

When we first start working with a client, one of the first questions we ask privately to each member of the leadership team is the first question of Goldratt's Five Focusing Steps – "Could you please identify your company's constraint (or key leverage point) – the primary element in your business which fundamentally limits your company's profitability?" Invariably, there is no consistency in the answers provided by the executive team members. If the leadership team rarely has the same answers, then how can their actions to improve their departments be synchronized? What does it mean to synchronize the various departments of a company around its few leverage points? We will address these questions and more in the next section.

Applying the SMBM

The SMBM starts with synchronizing the internal business – Operations, Finance, and Sales & Marketing. Once this synchronization is complete, the definition of the system is expanded and the external system is also included – customers and suppliers. HR and IT are re-directed early on to support both the internal and external synchronization. Finally, the business is ready to develop a dramatic new business strategy.

The first step in applying the SMBM to internal synchronization is to follow the Five Focusing Steps. (previously explained)
Once the constraint or leverage point is suitably identified, exploited and subordinated to, the SMBM model can then be applied to synchronize all of the internal departments operating under a new set of principles.



Operations (Systems Approach)
Production
The capacity constrained work centre is the key resource. The primary measurements are on-

time to constraint and constraint utilization because a new belief reigns in the plant – a resource standing idle is not a major waste. To operationalize these principles, the TOC applications of Drum-Buffer-Rope production planning and Buffer Management are implemented.

Distribution
The best way to manage inventory is to reduce the replenishment time (through the elimination of the order lead time and production lead time) to decrease the reliance on the forecast. In addition, inventory is aggregated to the highest point away from the point of consumption still within the customers' tolerance time. Forecasting is only done at the aggregate level for capacity planning purposes. To operationalize these principles, the TOC application of continuous replenishment is implemented.

Engineering
The overall constraint in engineering is identified and new projects are staggered to the drum of the critical resource / critical activity capacity. Project and feeding buffers are assigned to protect the critical chain and priorities are directed by relative buffer consumption. Business wide Buffer Management in combination with the concept of Profit Velocity (to be introduced in the Finance and Measures section) drives all the priority projects for the process engineering function. To operationalize these principles, the TOC Application of Critical Chain Project Management is implemented.

All of the Operations functions are focused primarily on reducing lead time, increasing product availability, increasing flexibility, reducing the investment in inventory and increasing on-time performance to maximize the company's sales and throughput.

Finance & Measures (Systems Approach)
Since the Finance function is the scorekeeper of the business and the measures they enforce often drive the behaviour of other departments, a new set of measures are embraced using the TOC application of Throughput Accounting. Decision making is now guided by the following principles.

Under the Systems Approach, the only costs that products have are those that are truly variable (primarily material costs). Product profitability is determined by the amount of throughput (sales less truly variable costs) generated per unit of time on the constraint – this measure is called profit velocity. Profit Velocity (PV) is the only measure that links a product's contribution to net profit to the amount of constraint capacity consumed. In addition, PV is also the only product based measure of profitability that is 100% correlated to the product's impact on total net profit. During the application of the SMBM, many executives are surprised to discover that their products with the highest Contribution Margin, (measured as either a percentage or dollar contribution per unit) rarely are the products which contribute most to the company's total net profit.

Finally, all business decisions, such as make / buy and investment decisions, are based on their impact on the constraint (leverage point) as they relate to increasing throughput, decreasing operating expenses or decreasing inventory.

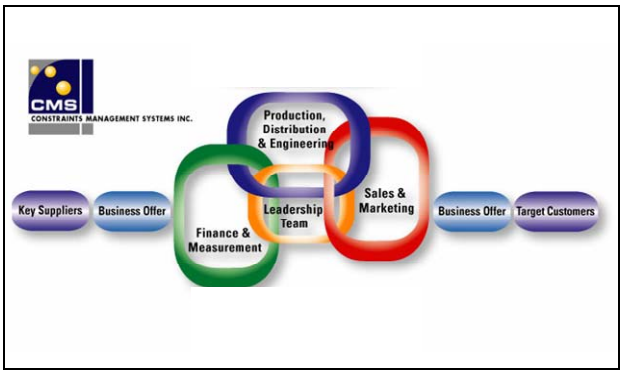
The System Management Business Model

Sales & Marketing (Systems Approach)
Sales & marketing strategies are re-aligned around the products with the highest Profit Velocity. In order to match sales to capacity, the plants available / excess capacity is clearly communicated to the sales & marketing function and their mandate is to sell products based on the marketing plan, as well as, sell products that maximize the available capacity.

Role of the Leadership Team
Using the SMBM, each departmental leader now understands how they can contribute to either the exploitation of or subordination to the leverage point. Strategic and operational plans are now developed with the leverage point at the centre of all the strategic choices.

In summary, the application of the Systems Approach to business management and improvement, combined with the implementation of the SMBM, synchronizes the internal system as follows. The Leadership Team now ensures that the Operations function identifies and exploits the internal leverage point; the Finance function measures the performance of the leverage point; and the Sales & Marketing function sells products and services which maximize the throughput dollars generated per unit of the leverage points limited capacity – a fully synchronized system.

Once the internal system is synchronized, the business can now look to expand the size of the system to include the entire supply chain by synchronizing with customers and suppliers.



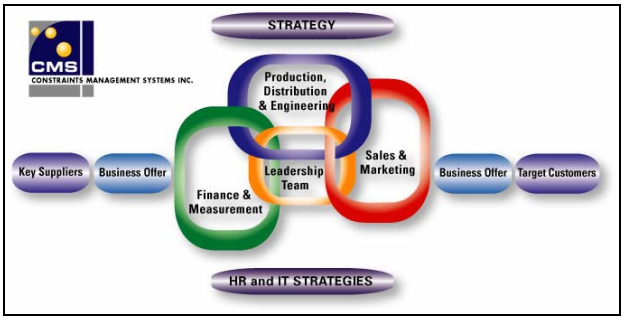
Business Offer to Customers (Systems Approach)
Improvements in the Operations function like lead time reduction, flexibility, product availability, and on-time performance are marketed as new premium Business Offers and sold to the customers as guaranteed delivery or emergency response services, etc. This leads to securing increased volumes and/or throughput by increasing the customer perception of value for the company's product or services vs. decreasing price to increase volume and sell excess capacity.

The requirements for customers to place Purchase Orders based on MOQs are replaced with consumption-based replenishment. Of course, to implement this, the customers need to agree to eliminate their EOQ requirements. The benefits are numerous, not only does the customer no longer have to order well in advance according to their forecast and the company stops making to their customer's order (which is a forecast), but, the entire ordering process is eliminated. Now the company has truly created a win-win relationship with their customers. In order to fully design these changes, the TOC Thinking Processes are used to develop customizable Business Offers.

Business Offer for Suppliers (Systems Approach)
Similar to the change in the Business Offer to customers, the company is now able to work more collaboratively with suppliers. Rather than ordering materials from suppliers using any form of EOQ, suppliers are asked to replenish the company's inventory based on consumption. In order to accomplish this, the company gladly provides each supplier with its actual consumption data as well as any information that the company has about its customers' consumption of the supplier's products / components. The primary measures used to evaluate suppliers are based on stock-outs and inventory levels and are used to drive improvement versus apply penalties.

Once the internal system is synchronized with the first link of the external system the company should take steps to complete the external synchronization of the entire supply chain.

Throughout the entire transformation to a System-based managed company, the HR and IT functions provide support to both the internal and external synchronization.

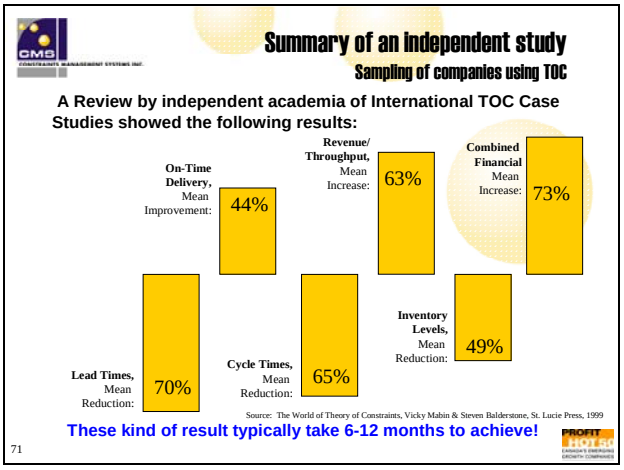


HR and IT Strategies (Systems Approach)
Rather than focus on automating the administrative function of the business, both the HR and IT Strategies are primarily focused on enabling people and IT tools to exploit and subordinate to the leverage points. From an HR perspective, job descriptions, performance measures, compensation, and training and development, etc. are all linked to the performance of the leverage point. Likewise, IT tools are deployed to facilitate the scheduling of the leverage point, automatically generate the right set of system-based performance measures, as well as facilitate the replenishment with suppliers and customers.

Strategy (Systems Approach)
After completing the strategy implementation to synchronize the company, both internally and externally, the SMBM can now be used to chart a new business strategy. Rather than consume all of it energy responding to day-to-day fires, the company's leadership team can focus on implementing a well defined long-term strategy using the following principles

- The company uses the window of opportunity created by implementing the SMBM to identify a factor in which an order of magnitude improvement will bring a significant competitive edge and aims its improvement efforts to achieve it.
- The company is careful to enter only into new products which require almost the same resources it already has.
- The company elects not to take 100% of any market segment which is not very lucrative.
- The company is careful to enter into market segments where the probability that many of them dropping during the same time period is small.

The application of the Systems Approach to managing and improving business, using the principles of TOC and the SMBM has allowed many companies to realize the following kinds of business results.



The above results relate to companies that have successfully synchronized internally, and in some cases, externally. Even more dramatic results are achievable from full supply chain synchronization.

The CMS Business Audit™

CMS Business Audit™ is focused on uncovering your business' primary operating principles to determine if your business is synchronized around your company's few leverage points or if your company is following the mechanistic model of changing without necessarily improving?

This White Paper was authored by Duncan Patrick, Senior Vice-President with Constraints Management Systems Inc. Duncan specializes in assisting organizations improve their performance and the performance of their supply chain by developing Theory of Constraints based business, operating and marketing strategies focused on increased growth and profitability. In addition, Duncan works with clients to actively manage the impact the strategic change has on the client's people.

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