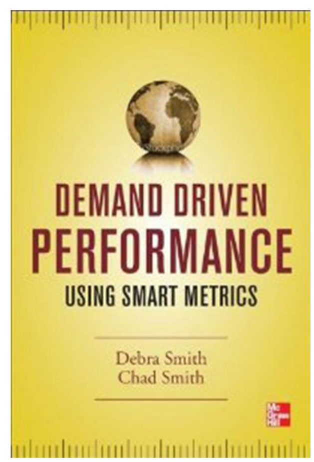
DEMAND DRIVEN ANSWERS

FOR ACCOUNTANTS

Debra Smith and Chad Smith, the authors of *Demand Driven Performance – Using Smart Metrics* answer questions from Certified Management Accountants (CMAs) about the concepts in their new book and the implications for industry in general and Finance and Accounting organizations specifically.



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Introduction

Over the past two decades we have been immersed in a variety of different supply chains. From fast moving consumer goods (FMCG) to aerospace to wood products to heavy assembly. While these environments can be dramatically different, one thing has been consistent in all of them – a heavy emphasis on unit cost minimization as a strategy to drive bottom line performance. And "heavy emphasis" is an understatement - it is hard coded into our information and operating systems and even our thinking. It dominates and/or underlies many of our KPIs. It influences decisions and actions on a daily and even hour to hour basis. Where does this emphasis come from?

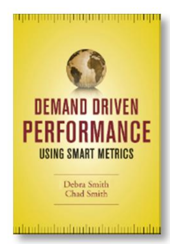
The emphasis on unit cost minimization comes from a steadfast belief that minimizing unit cost will directly lead to better return on investment performance. The belief is that as unit costs increase return on shareholder equity goes down and, conversely, as we drive unit cost down the financial performance of the organization is maximized. This steadfast belief permeates most large manufacturers and supply chains from top to bottom – it is what Einstein called a "Deep Truth."

Everything from curricula approved by academia to the approaches and solutions offered by consulting firms to the major ERP software providers is a part of this Deep Truth. Indeed entire corporate careers have been built around it and devoted to promulgating it.

What if today's Deep Truth is totally, completely, unequivocally FALSE?

- What if the whole idea of a least unit product cost is simply "bad math" – an inappropriate use of an equation that both economics and even physics would reject?
- What if legislation created a reporting requirement that has become the focus of accounting information and replaced, almost by accident, the real definition and rules for relevant information for decision making and product costing?
- What if all of our information systems are hard-coded to compile cost reporting and resource area measures from the wrong or misapplied rules and assumptions about how costs and revenue behave?
- What if unit cost has become such a Deep Truth that an entire discipline about what defines relevant information has been all but lost?
- What if even those who know what relevant costs should be operate inside a system that is not capable of providing relevant information in a relevant time frame to act on?
- What if people no longer question taking actions they know will lead to predictable and dire negative consequences that they must deal with later?

Answering these questions is the journey *Demand Driven Performance – Using Smart Metrics* is designed to take the reader on. The bottom line is that our operating methods and measures lost their way AND have failed to adapt to significant changing circumstances. That failure has left companies with little access to relevant information to drive coherent tactics and actions at all levels of the organization.



Look on the last page of this paper for a special promo code from McGraw-Hill on *Demand Driven Performance – Using Smart Metrics*. Get 20% off AND free domestic shipping!

Demand Driven Answers for Accountants

By Debra Smith and Chad Smith

On February 13, 2014, the Institute of Management Accountants held a 60 minute webinar with Debra Smith and Chad Smith, the authors of *Demand Driven Performance – Using Smart Metrics* (McGraw-Hill, 2013). The webinar was attended by over 1,000 Certified Management Accountants. There were some really great and point on questions that the authors did not have time to get to. We put together a document that listed all of those questions and our responses.

You can watch a version of the webinar at: http://demanddrivenperformance.com/videos/ (Introduction to Smart Metrics – Webinar #1) which is the first in a series of three webinars. People can sign up for Webinar #2 (Becoming Demand Driven) and Webinar #3 (Using Smart Metric) at: http://demanddrivenperformance.com/webinars/

Let's review the audience make up and their responses to polling questions in the webinar.

Audience makeup:

Demographic Summary	
	Webinar Totals
Attendees	1,028
# of countries represented	41
Attendee Feedback Summary	
	Webinar Totals
Agreed that the presentation was "Excellent"	82%
Information presented during the webinar increased attendee understanding of the topic	85%
Information obtained was highly relevant to the attendee job and/or professional development needs	68%

During the webinar we asked the audience four questions. These questions were spaced out through the webinar.

	Poll Question	Poll Responses
1	**What do you think is the biggest factor in ROI?**	
	a. Lowest unit cost	12.0%
	b. Best resource efficiency	53.3%
	c. Best total system flow	34.7%
2	**What wins out in your organization?**	
	a. Cost centric tactics and actions	38.8%
	b. Flow centric tactics and actions	17.7%
	c. We oscillate back and forth between expediting to protect flow and actions to protect cost	43.4%

3	**How would you describe the complexity of your company's supply chain in the last decade?**	
	a. Stayed the same	15.4%
	b. Complexity has increased	78.2%
	c. Complexity has decreased	6.3%
4	**How would you rate your ERP system's ability to focus on the relevant information?**	
	a. Poor	22.5%
	b. Moderate	60.8%
	c. Good	16.8%

Our comments on the polling responses:

Question 1 - What do you think is the biggest factor in ROI? This question was asked immediately at the start of the webinar without any content being delivered. Answers "a" and "b" are essentially two peas in a pod. One is (resource efficiency) is often a means to an end (lowest unit cost). Nearly two thirds of the polled Management Accountants did not see "best total system flow" as the biggest driver behind ROI. Given the basic fundamentals and purpose of Management Accounting this is cause for concern and validates how pervasive the Deep Truth of unit cost has become.

Question 2 - What wins out in your organization? This question was asked after presenting the basic conflict most organizations and manufacturing plants find themselves in with regard to meeting cost-centric KPIs and flow-centric KPIs. The polling results are quite telling and were expected. They indicate that many organizations either defer to the cost-centric metrics or oscillate back and forth between actions and tactics to protect flow and unit cost and their competing metrics. When this oscillation occurs Operations personnel typically get caught between a rock and a hard spot.

Question 3 - How would you describe the complexity of your company's supply chain in the last decade? Probably the most surprising thing is the results were not slanted even more toward higher complexity. The increase in complexity and its impacts to accounting and planning systems is a major theme of our book.

Questions 4 - How would you rate your ERP system's ability to focus on the relevant information? Unfortunately, this is what we expected. Despite spending huge amounts of money and time implementing immensely powerful ERP systems people are still starved for information. This hole in relevant information accounts for the huge proliferation of and reliance on spreadsheets in both planning and finance. This phenomena is commonly termed "Excel Hell."

Webinar Questions from the Audience

1. **Question:** Flow analysis can be very scientific, e.g. whole courses are taught. How can we as accountants know what is expected of us and also add knowledge of flow operations?

   Answer: Good question. It will help to make a clear distinction between flow analysis and a flow map of the connections and interconnections of your organization so you can design a system for flow. They are not the same thing. It is understandable that accountants can feel a bit out of their depth in the field of supply chain and flow "analysis" especially given the past and still current approach of using incredibly complex optimization scheduling models that attempt to optimize all resource utilization and flow paths. But before you feel too intimidated one of the major points we are making is these optimization models are wholly built on the wrong rules and assumptions about how flow behaves. They do not fit for today's complex nonlinear systems, who by definition cannot be optimized. Complex adaptive systems (CAS) flow and output is governed by a very few critical points. This trait of CAS makes them inherently simple to map, understand and manage flow. We believe our book *Demand Driven Performance – Using Smart Metrics* provides the answers and framework you are asking for. It answers both why a company should make the shift from a cost centric efficiency strategy to a flow centric system efficiency strategy as well as articulating the steps to designing implementing and sustaining a system designed to promote and measure flow.

Accounting is critical in bridging a company's period monthly financial metrics to the time and quantity based tactical measurements necessary to drive tactical and execution actions for flow during the month – hour to hour and day after day. This understanding begins with being certain you can define relevant information in both a tactical and strategic time frame based on the impact to flow. This concept of relevant information and relevant time frame are core concepts in Management Accounting. We devoted three chapters in the book specifically to the re-emergence of the power and the role of Management Accounting. A role that has been largely lost or derailed. Read the book and team up with your operations and supply chain counterparts. Together you can help each other understand the connections and interconnections of flow from quote to cash and identify those critical points that control flow. It is essential that accounting help identify and remove the conventional cost based metrics and replace them with appropriate time and quantity metrics to drive tactical decisions and actions inside the short run time frame. If accounting is not part of defining and creating the solution for flow they will most likely block an organization's ability to move to a flow based operating model.

2. **Question:** Supply Chain often finds itself at the mercy of other departments to forecast properly and be provided the requests on a timely basis for the organization. Often Supply Chain's incentives are based on meeting the needs of the revenue-generating departments but has little control on the timely supply of information required to fulfill this need. How would you suggest in incentivizing cross-functional departments to increase ROI for shareholders and an equal playing field for all departments?

   Answer: Great question! Tying system performance and flow to individual behavior has always been a huge challenge. In Demand Driven Performance we revolve metrics around six key objectives. With all of these objectives there is a message for individual resources and specific metrics that reinforce that message and keep the system synchronized and coherent to flow. But before you can simply turn on the "right" metrics you have to start with a Demand Driven Operating design built to speed and protect flow. We have two additional webinars designed to take people through this. Those webinars are available at: http://demanddrivenperformance.com/webinars/. Webinar #2 (Becoming Demand Driven) take the participants through building a Demand Driven Operating Model. Webinar #3 (Using Smart Metric) shows how to operate and measure that model. We hope you can join us!

3. **Question:** At the beginning of the presentation, you mentioned how GAAP uses outdated cost accounting. Is GAAP in the process of changing to recognize this?

Answer: GAAP does not and should not care about providing internal management reporting. Why? Because GAAP's purpose is to provide a consistent reporting picture about what happened over a past period NOT what should be done today or to predict how thing will occur in the future. GAAP's job is to create a level playing field that all companies must use for reporting standards. We need to let GAAP be used for what it was intended and stop self-imposing a limitation by using it inappropriately. It is the job of management accounting, an entirely different body of knowledge than financial cost accounting, to provide meaningful and relevant information for decision making and that means nonfinancial reporting as well as reporting with financial aspects. It is the behavior of the cost or revenue over the relevant time frame that determines if a cost or revenue is relevant information. Any costing method that attempts to use or match any fixed cost to a unit of output to provide information to drive planning and execution tactics and actions will result in suboptimal flow and all of the negative effects to ROI associated with it. That was the point of the diagram in our webinar that demonstrated the negative outcomes to ROI of a Key performance Indicator (KPI) based on unit cost or resource efficiency competing with a KPI designed to measure flow and market service levels.

4. **Question:** How does EOQ work with Complex Adaptive Systems (CAS)?

   Answer: EOQ comes embedded with problematic assumptions about how costs truly behave in systems. Batches need to be considered not from a unit cost impact or perspective but from a flow perspective. Of course the more units you divide into the same fixed cost dollars the lower the unit cost will be but the total fixed cost expense will remain unchanged. That is what makes it irrelevant information. Remember the definition of relevant information for decision making is to include only the costs that differ between two alternatives. Flow is the key to maximizing ROI and batches can play a VERY big role in flow performance. Both Webinar # 1 and #3 discuss this topic.

5. **Question:** What book or resource is best to begin improving flow?

   Answer: Of course we believe our book *Demand Driven Performance – Using Smart Metrics* is a great start. Another book everyone should read is *The Goal* by Dr. Eli Goldratt (A book that Jeff Bezos requires all his managers at Amazon to read).

6. **Question:** Leverage in CAS adds return and risk? How do you suggest encouraging inherently risk averse managers to take the risk of CAS?

   Answer: We don't think it adds risk because it is based on solid science that has been practically proven by companies in almost every industry group. That was the point of the slide showing the results of early adopters. There is MUCH MORE risk in ignoring the implications and reality of CAS and operating to inappropriate rules and metrics. There is a Case Study that we recently released about the risk of ignoring CAS. The subject of the case is the Boeing 787 Dreamliner. The case is available here: The Cost of Trying to Control Cost – The Boeing 787 Dreamliner. Top management will perceive as risky anything they do not understand especially when it is directing them to ignore a convention. The key for anyone to make the shift is to help them make a logical bridge using their own intuition and experiences about what goes wrong today and the connection it has to the real core problem (the constant battle between "cost" and "flow"). If our systems are not designed for flow and neither is our strategy or our metrics then it is impossible to expect good flow to be an outcome the current system can deliver. The polling questions and answers clearly show that this experience is common and in fact prevalent in most organizations today.

7. **Question:** What about Middle East companies?

   Answer: We are certainly not regional experts on Middle East industry/supply chain but why do you think these companies would be any different? They still operate in increasingly complex supply chains and if they don't pay attention to the benefits of flow they risk the ability to maximize their ROI equation. It should also be noted that the entire world including the Middle East essentially has the same reporting rules and business education models.

8. **Question:** What are your thoughts on the right level of an organization to hold responsible for financial performance? Lowest level possible or higher?

   Answer: We think it starts at top. If the executives don't align the model to best protect flow then the results CANNOT be anywhere close to what they should be. Worse yet, if companies continue to measure and reinforce behavior that impede flow then the lower levels are put in a constant set of conflicts and poor compromises. Finance organizations can be the biggest part of getting leadership to see this dilemma and opportunity! Executives listen to the numbers and how they are presented. Finance provides the key information for almost all organizations – it is time to use that responsibility to leverage better flow control instead of cost control! Cost minimization is an outcome of good system flow. As accountants we can either be a HUGE part of the solution or we can continue to block the solution! It is time to bring Management Accounting into the 21st century and differentiate between strategic and tactical time frame information and metrics. What is ironic is prior to the proliferation of MRP II which institutionalized inventory unit cost metrics into the planning and scheduling functions, Management Accounting understood and provided information based on flow variance analysis not unit cost and overhead variance analysis.

9. **Question:** You mentioned variable contribution margin, is this a viable tool to improve flow?

   Answer: Every good Management Accounting text has a phrase that essentially says, "a company will profit maximize when it makes and sells the product with the highest contribution margin per unit of the scarcest resource." Contribution Margin must be looked at in terms of what is relevant and then the answer is a resounding "YES!" We did a quick little video called "Bad Math – The Importance of Relevant Information" that demonstrates this point. You can access the 16 minute video here: http://demanddrivenperformance.com/videos/**. Remember: Inside a tactical relevant range fixed costs are fixed.** ROI can only be leveraged by increasing flow over the same investment base inside that time frame. If there is no internal bottleneck to leverage the rate of contribution per unit of a scarce resource you will still leverage the entire investment based at the rate of incremental revenue – contribution margin during any one time period. That is the whole point of a basic cost, volume, profit model and one of the core building blocks of relevant information in management accounting. We cover this topic in some depth in the book.

10. **Question:** MRP is material requirements planning, what is ERP?

Answer: ERP stands for Enterprise Resources Planning. It is "the system." The American Production and Inventory Control Society (APICS) Dictionary (14th Edition, 2013, page 57) defines ERP as: Framework for organizing, defining and standardizing the business processes necessary to effectively plan and control an organization so the organization can use its internal knowledge to seek external advantage." ERP appeared around 1990 and evolved out of MRP II systems. Major ERP providers include SAP, Oracle, Microsoft, Epicore and Infor.

11. **Question:** Do Kanban systems function effectively under Flow models as they appear to be wholly MRPII based?

    Answer: We are surprised to hear that Kanban systems appear to be MRPII based. In truth Kanbans are simple order point positions typically placed between manufacturing resources. They are typically managed outside "the system" through manual and visual systems utilizing the passing of cards. The word "kanban" in Japanese roughly translates to "card." Kanbans do have a time and a place in the flow-centric world. That time and place, however, is NOT always and everywhere. Kanbans can work well in an environment that has a high degree of stability – that is the volume and variety is steady throughout the day, week and month. When tomorrow looks like yesterday the tool works really well. The big difference between Kanban and conventional MRP order point is that there can be several kanbans in flow at once where the traditional order point has only one order at one time that will cover demand over lead time.

    This question, however, might be referencing a "dirty little secret" in a lot of Lean implementations. Lean systems (and their Kanban positions) rely on pacing the system to a required rate. The term for this is called "takt time." The term takt is actually of German origin roughly translating to "meter." The Japanese borrowed this word from the Germans. Unfortunately, many companies that claim to live the Lean dream establish their takt times and size their kanban positions through a combination of forecast and cost drivers respectively. This is far from being flow-centric and actually risk increasing waste.

    This very subject is worthy of a whole webinar. For those of you interested in Lean, MRP and these Demand Driven concepts this white paper by the Demand Driven Institute might be intriguing: Lean finds a Friend in Demand Driven MRP.

12. **Question:** What type of resistance have you encountered when trying to change the focus from cost centric to flow centric when implementing this at a manufacturing plant?

    Answer: You name it, we have seen it. Tantrums, resignations, involuntary resignations, sabotage, etc. Now when you ask us where the resistance typically comes from you might be surprised. The people that work on the line, that do the purchasing, that see how flow occurs tend to embrace it in short order. Why? Because it is intuitive and resonates with how they know the system actually behaves. We also find that accountants close to operations or with operating backgrounds are quick to get on board. They are well aware of the struggle and are actively looking for a way to bring meaningful information and measures to the organization. We often struggle with finance organizations driven by executives and or managers from public accounting backgrounds who do not have operations experience. However, if they are open to learning it is easy to make the bridge for them with the help of some simulations and good logic.

Resistance is almost always based on the belief that they will lose cost control. The truth is that they will gain flow control which will translate directly to better overall cost control.

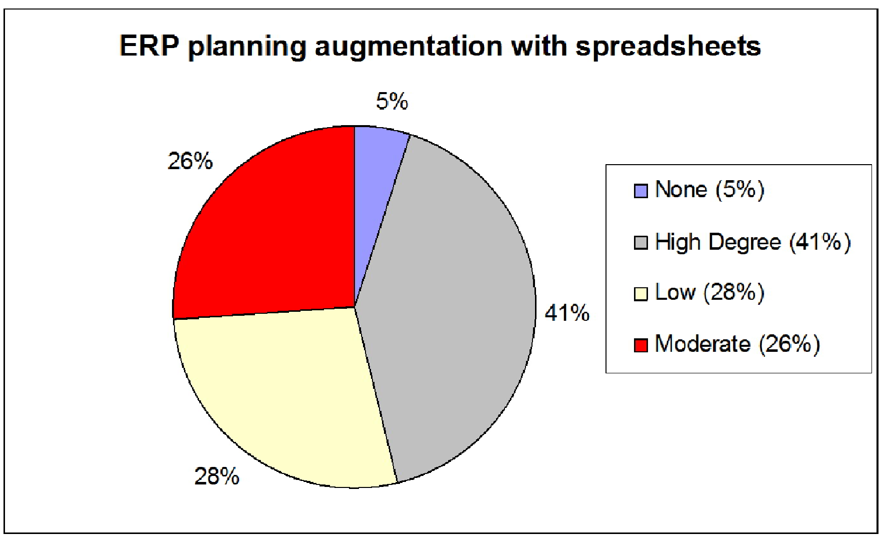
13. **Question:** Are most companies that are successful in improving their ability to see flow centric information getting that visibility with "bolt-on" solutions to their ERP and MES systems?

    Answer: From our experience the answer is yes, especially when you group Excel into the bolt-on or side system category. This is something that needs to change. ERP providers are failing to provide relevant tools. Let's be honest here. Almost every company is working around its formal system in some way. Why? Because our expensive and powerful systems are not providing the right information. Consider these three things:

    - The polling question at the end of the IMA webinar showed that only 17% of them felt that your system was good at providing relevant information.

How would you rate your ERP system's ability to focus on the relevant information?	
a. Poor	22.5%
b. Moderate	60.8%
c. Good	16.8%

    - Consider this research by the Demand Driven Institute that shows the vast majority of manufacturing companies rely on spreadsheets to play a role in their planning process.



    - Finally, consider this research about the risks associated with spreadsheets. "Close to 90% of spreadsheet documents contain errors, a 2008 analysis of multiple studies suggests. 'Spreadsheets, even after careful development, contain errors in 1% or more of all formula cells,' writes Ray Panko, a professor of IT management at the University of Hawaii and an authority on bad spreadsheet practices. 'In large spreadsheets with thousands of formulas, there will be dozens of undetected errors.'" (Wall Street Journal's MarketWatch, April 20, 2013, Jeremy Olshan). Also consider that there is really no control or auditing of our spreadsheets. We simply assume that the sheets don't have errors – an assumption that may be tenuous at best.

ERP Providers need to recognize the opportunity here! There are some major ERP players that are working on modules that will embrace the Demand Driven methods. Additionally, there are great add-on (bolt-on) solutions out there that are producing big wins in global giants like Unilever.

14. **Question:** Would a good metric by product be inventory turns * (gm%/CM%) as a profitability index in order to cull or improve SKUs?

    Answer: Velocity or rate of flow is always a good measure but be careful! We must always judge that rate in relation to total potential. Anyone can make something turn very fast if they are willing to accept lots of stock outs. In other words, we must always put rate beside things like service level or availability. Whenever we hear people brag about really great turns we immediately ask about compliance to requested and promised dates (they are different) as well as ask them about their expedite related expenses. It is possible to be too lean. When you are too lean your system becomes brittle. Turns look great but service takes a big hit and expenses tend to sky rocket due to expedite related activity. Consider this quote from the AMR (now Gartner) report Demand Driven Manufacturing (2007, page 8):

    > "Experienced lean practitioners…having come to the startling realization that in the process of removing waste, they have made their supply networks too brittle to accommodate the inherent variability in both supply and demand. They've literally leaned the agility out of the supply network."

    With all of that said, we think the suggestion of inventory turns * (gm%/CM%) has a lot of potential in many environments. There is a very well established measure in the distribution and big retail world called "GMROI" or "gross margin return on investment (pronounced "gim roy"). The standard GMROI formula is: inventory turns x gross margin % and there are definite levels of defining what level is good, bad, etc. The suggested equation appears to be adjusting the infamous GMROI equation to weigh the equation by "gm%/CM%" ratio. Of course you would get to the same base line analysis by redefining the base as CM %. If the decision to stock or not to stock a particular product is dependent upon a certain "GMROI" score then the results will be significantly different considering contribution margin (CM) vs. gross margin (GM). Remember gross margin has both labor and fixed overhead rates and vary dramatically between products depending on the driver used to assign them. Regardless of the driver they have no correlation to predicting and or driving cash flow generation.

15. **Question:** Is there a single key metric that a Fp&a team should be focused on as a basic measure of efficiency of supply chain over all others

    Answer: The single key metric for every organization in a financial period is always some form of return on shareholder equity and to keep it simple let's just say Return on Investment (ROI). The problem comes when we break ROI down in to its five major KPI components and attempt to push them down as tactical objectives:

    - Increase Sales,
    - Decrease cost
    - Decrease inventory
    - Improve quality and
    - Improve market service.

When these tactical objectives are pushed down in the organization, conflicts between and within the links of the supply chain are created. This is because the system by definition is interdependent and so are each of the objectives but we are treating each as if it is independent. The result is chaotic and messy and was demonstrated in our webinar when we exposed the negative results to ROI when a company takes actions to drive down unit cost while simultaneously taking actions to meet on time deliveries to customers. Prove it to yourself by answering the following questions:

- Can a drive to increase quality drive up costs and increase cycle time?
- Can a drive to decrease cost negatively impact quality and our market place?
- Can a drive to increase sales erode margins?
- Can a drive to increase on-time delivery or shorten our lead time increase cost and inventory and erode quality?
- Can programs to decrease inventory starve operations and result in low on-time performance, increased freight and more overtime?

That is one of the reasons why we are very clear that in a tactical time frame, the only measure operations should focus on is protecting the flow of relevant information and materials through the supply chain to the market. That means time and quantity measures not cost measures. The second reason is that all costs, other than direct materials and outsourcing are fixed in the short run and therefore irrelevant. If your system is not set up to focus on flow then you will have a very difficult time creating real time measures on the status of flow and the variation between what was planned and what was experienced. The major point of the webinar was to point out the criticality of flow in determining ROI and to clearly demonstrate that the core problem blocking companies from improving flow and ROI is the lack of relevant information regarding the status of flow. Our two follow-on webinars are focused on the steps to create an operating model that can drive flow and is capable of generating smart metrics focused on what blocks flow and the opportunities to improve it.

16. **Question:** What factors can create safety stock requirements in an MRP system?

    Answer: We will tell you but then we quickly tell you not use it! Safety Stock equations are designed to keep a level of inventory typically based on usage over a defined lead time factored by forecast error rate. Safety stock equations assume the use of forecast or planned orders to directly generate supply orders. This conventional MRP practice can actually exacerbate the bullwhip (the exact opposite of what it is supposed to do)! More on this topic is available in the two white papers:

    - Replenishment Buffers versus Safety Stock
    - DDMRP Buffer Explanation and Simulation

17. **Question:** What are the disadvantage of using the demand driven system instead of push systems?

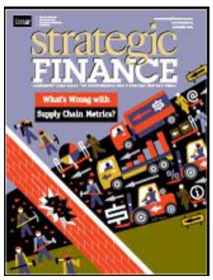
    Answer: The bottom line is that the Demand Driven methods are superior to "push" systems in situations in which:

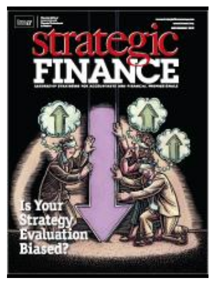
    - The Customer Tolerance Time (CTT) is less than the time that it takes to procure, produce and position the product
    - The working capital in the system is a real economic consideration or risk (the penalties of guessing wrong are not trivial).

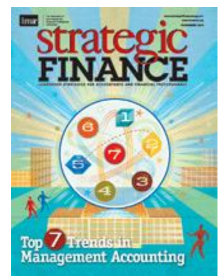
> We think these two conditions describe the vast majority of situations today. A notable exception: each new version of the iPhone®. If you have a single product company or no common materials or capacity (both labor skill sets and machinery) and the market will buy everything you can produce, then a push system would be effective. This is NOT a complex adaptive system and in the 1,000+ companies we have encountered we have yet to meet a company with this profile. They may exist but our paths have not crossed.

Thank you to the folks that asked these questions and to the IMA for allowing us to share them!

Additional resources on this topic from the Institute of Management Accountants is available for free. The authors contributed a series of articles on this topic in the IMA's Strategic Finance Magazine in the Fall of 2013 (October, November, December). Click each magazine to get each article.







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Get the Book!

In today's volatile and globally competitive environment, new decision-making tools are required to monitor, measure and improve total organizational performance. Co-written by internationally recognized experts in the field *Demand Driven Performance – Using Smart Metrics* explains why current measurement forms must be replaced.