

# Application of six sigma in supply chain management



Application of Six Sigma in Supply Chain Management Anoop P. S. Abstract:

This paper hypothesises that, whilst Six Sigma as a change and improvement strategy is delivering significant business benefit to practitioner organisations, it has not been successfully adapted to deliver similar benefits across supply chains. It demonstrates by reference to the literature that most published applications of Six Sigma in supply chains are related to the application of traditional internal Six Sigma methodologies to the internal processes of a supplier to the “ Six Sigma Organisation”.

In this paper, the issues particular to an application of Six Sigma in a broader supply chain context are discussed, with reference to specific supply chain issues. It is concluded that Six Sigma does have something novel to offer organisations over and above the contribution of existing approaches to supply chain improvement, and a conceptual model is proposed that is consistent with the literature and has potential to support such an introduction. Although rooted in the supply chain realm, SCOR adherents see a role for the methodology as the gatekeeper - identifying the projects most likely to render ROI using SCOR, Lean or Six Sigma. There is already a natural link between Lean and Six Sigma at the program and project execution level.

The model integrates the Balanced Scorecard, SCOR model (Supply Chain Reference model) and Six Sigma DMAIC (define, measure, analyse and improve) methodology in a two-level framework. This is a strategic-level cycle, developing focused projects to generate maximum business benefit, and an operational-level cycle, applying Six Sigma and lean tools in a DMAIC cycle to deliver supply chain improvements. Cautions and requirements for <https://assignbuster.com/application-of-six-sigma-in-supply-chain-management/>

the success in practice of such a model are discussed and it is concluded that the model should be tested in practice to validate and develop further the methodology. Keywords: Six Sigma; Supply chain improvement; Lean; SCOR model; Variability reduction

## 1. 0INTRODUCTION 1.

1 General Introduction Six Sigma Process Improvement is a rigorous approach to improving business processes by addressing the underlying causes of variation that lead to poor performance as experienced by the 'customer', who is the recipient of the outputs. The early exponents were Motorola and GE in the 1980s. Since then, many organisations ranging from manufacturing to service in all sectors, have successfully deployed Six Sigma to deliver measurable cost, quality and time based improvements.

## 2.

0 LEAN - SIX SIGMA In the past, Lean and Six Sigma have at times been viewed almost as rival methodologies, with some companies choosing one or the other as their primary improvement vehicle. Two of the most powerful forces in manufacturing and now the broader supply chain are "Lean" and "Six Sigma". Traditionally, many companies have adopted one or the other as their primary approach to operational improvement, or in some cases used both but as fairly independent tools. Increasingly, however, companies are seeing the benefit of combining the two techniques into a more integrated strategy that uses the best of each approach, which can be highly complementary.

Many believe this "Lean Six Sigma" strategy is the best way to improve overall supply chain results and tackle process improvement more holistically. Lean, the name given to the Toyota Production System in the

book *The Machine that Changed the World*, has traditionally been associated with the elimination of waste in business processes. Lean was originally focused on improvement on the factory floor, but has since been used in some cases to power broader supply chain improvements. European retailer Tesco, for example, used Lean principles to engineer improved store replenishment processes. Six Sigma is a quality improvement methodology that in general seeks to reduce process and results variation. Originally focused on improving the quality of manufactured components, the approach has also been expanded for use in improving almost any business process.

Drug wholesale McKesson, for example, has used Six Sigma to improve a variety of supply chain processes, such as inbound trailer cycle times and pick face replenishment efficiency.

## 2. 1 Adding Value With SCOR

Developed by the not-for-profit Supply-Chain Council, SCOR (Supply Chain Operations Reference) is a model that links process elements, metrics, best practices and features associated with supply chain execution. It helps to identify and quantify critical opportunities for improvements not only within the supply chains of a single company but also between multiple trading partners. It describes a continuum of processes: Plan, Source, Make, Deliver and Return.

SCOR works best with companies that have an enterprise information platform that can carefully track this continuum through KPIs and scorecards or at least provide the data so that a qualified enterprise platform can acquire the data, analyze it and surface it to the people who need to see it.

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render ROI using SCOR, Lean or Six Sigma. There is already a natural link between Lean and Six Sigma at the program and project execution level. Six Sigma has the project tracking and financial accountability elements. Lean helps “ surface the rocks” that become ideal targets for Six Sigma. The two combined provide a powerful results-driven program.

The opportunities for Six Sigma and Lean application in SCM are numerous. Specifically in warehousing management you may want to look at metrics around fill rates, pick and pack defects and dock-to-stock or dock-to-bench type metrics. Start with Lean and look for opportunities to get the dock-to-stock (time from material unloaded on dock to put away on shelf) cycle times down (this impacts availability rates to the production floor). Take a walk through the warehouse and if you see lots of boxes and pallets sitting around, you know you have opportunities! Once your cycle times are lower, then take a look at defect rates in the other areas of standard warehouse metrics. Let me know if you have some questions – I have extensive experience in this one.

3. 0 Bringing Lean and Six Sigma Together Industrial giant Honeywell was among the first to recognize the power of combining Lean and Six Sigma disciplines. When Honeywell acquired Allied Signal in the late 1990s, under the leadership of legendary CEO Larry Bossidy, it created a mechanism for combining Lean and Six Sigma that it called “ Six Sigma Plus. The company hoped to improve processes and results by using Lean to streamline processes and eliminate waste, then improve the consistency and reliability of those processes using Six Sigma.

3M is another pioneer in the application of Lean Six Sigma. When Jim McNerney took over as CEO of the company in 2001, the former GE executive quickly helped drive a Lean Six Sigma program throughout the company. “Lean Six Sigma always starts by defining value from the supply chain from the eyes of the customer,” says Paul Husby, a former VP of Supply Chain Services at 3M. Every business has either an explicit or implicit strategy and needs the operational supply chain to provide specific performance to support that strategy.

Lean Six Sigma has a primary goal of significantly improving operational excellence, and should also greatly improve a company’s competitive advantage with key customers and markets. ” There are several principles that drive the strategy of bringing Lean and Six Sigma together: •Lean cannot bring a process under statistical control •Six Sigma alone cannot dramatically improve process speed or reduce invested capital Both enable the reduction of the cost of complexity, but in complementary ways In the past, Lean and Six Sigma have at times been viewed almost as rival methodologies, with some companies choosing one or the other as their primary improvement vehicle. With Lean Six Sigma, that false conflict can be formally removed, and companies can benefit from the best of both approaches. The two methodologies can interact and reinforce one another, and there is much evidence that total improvements in a process is larger if Lean and Six Sigma are implemented together.

The opportunity is to reduce the variability in value-adding processes,” said SCDigest editor Dan Gilmore. “Lean should eliminate the non-value added process steps, and then Six Sigma can be applied to tighten up the execution  
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of those processes. ” So, from a Lean perspective, what Six Sigma adds is the ability to reduce process variability. From a Six Sigma perspective, what Lean adds is often greater process and cycle time velocity, as well as lower operating costs.

It can also be said that Lean focuses on reducing Time variability, while Six Sigma focuses on reducing Process variability. Lean tends to generate more “ Quick Fix” solutions, while Six Sigma takes a more “ Root Cause” approach. It is also possible to think of applying Six Sigma principles at the “ pursue perfection” stage of one popular six-step Lean model. Some companies are taking the concept even further, adding in Eli Goldratt’s Theory of Constraints (TOC) methodology as another tool, usually front-ending TOC before both Lean and Six Sigma. This three-way combination is sometimes referred to as TLS (TOC, Lean, Six Sigma).

Companies that have focused on either Lean or Six Sigma as a primary strategy to the exclusion of the other, or that use both but as very separate tools, should consider whether there is opportunity to deliver better results from a Lean Six Sigma strategy.

4. 0 THINGS NEED TO KEEP IN MIND

4. 1 Is our data integrated, clean and in one location? Data sitting in silos, incompatible or duplicative data, and – most importantly – data that requires the intervention of the IT department to retrieve will make any business improvement program much more costly than necessary. A robust business intelligence solution is a must.

4. 2 Can I quickly see what is working in quality programs? If you would like to report to Wall Street analysts that a Six Sigma initiative saved \$1 million

on a new product, do you need to deploy a portion of your staff to dig through information, or is that information readily available on a dashboard? More importantly, is the information up to date? Can a portal tell at a moment's glance what the quality programs are doing for the company's bottom line and how they compare to one another? 4. Can my staff visualize the results of quality projects? Six Sigma Black Belts parachute into departments they don't work in. Being able to show how a process could be improved helps win over reluctant team members to the results of a project.

An easily integrated visualization application is an important component. 4. 4 Do I have an application powerful enough to analyze and (especially when using Lean) forecast? Can my staff - without any programming skills - create "what if" scenarios that will help identify the best methodology for improving quality and performance? Using SCOR to align corporate goals and develop and execute a plan for improvement targets, and then employing Lean or Six Sigma or both to the prioritized projects, is a way forward for companies that recognize that survival is truly the provenance of the fittest. Just having these methodologies under the roof isn't enough. They need to be converged and integrated methodologies working off the same platform.

A focus on integration will provide the organization with optimized yields and improvements. The trend toward converging methodologies is really about change management and its logical extension to platform status. After all, change is not a one-time event or even a series of one-time events but must be a culturally ingrained part of the organization's DNA. Organizations want to embrace change, but doing so requires an integrated approach to using



methodologies and a strong enterprisewide platform that goes beyond business intelligence to include data integration and analytics.