

BPM and Lean: Part 1-- The Plan

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Purpose of Article

Organizational success, demonstrated through engaged employees, effective processes, and satisfied customers are the benchmarks all businesses strive to meet. The disciplines of Business Process Management and Lean support organizations in meeting these goals. What company does not want to be agile and flexible, have the ability to quickly bring new products and services to market, and seamlessly integrate Information Technology and Customer Service while continuously delighting their customers?

Process provides a common understanding about what is happening: who does what when, using what artifacts, with the business rules that impact a process flow. When you pair Business Process Management (BPM) and Lean, you have the foundation for what is needed to bring your processes all the way to automation.

This series of Articles will explain how your enterprise can leverage the standard BPM methodology, and enhance this methodology with the addition of Lean thinking, making your enterprise more agile and flexible to meet today's business demands. Throughout these Articles, we will follow Pete's Pizza Palace, as Pete Jr. attempts to solve business problems through Lean thinking.

Introducing Lean

BPM and Lean have a lot in common. They both:

- Believe that the work of an organization is contained in the process. The processes of an organization are its business.
- Respect people's knowledge about the work they do.
- Are process driven with the end goal of continuous improvement.
- Advocate for standard process documentation in order to measure and improve.
- Require executive support for sustainable improvement and transformation.

Lean is an improvement methodology based on a customer-centric definition of value. Lean processes provide value in the most effective way possible through a combination of the elimination of waste and a motivated and engaged workforce.¹ Lean focuses on removing wastes from processes.²

The customer centric view is one of the key components of Lean. This view provides a unified focus on the purpose of the process. Lean distinguishes between customers and consumers though both are a part of the customer-centric conversation:

- The customer is the person or entity who is the recipient of what you produce, either within your organization (next in line for your product or service) or outside of your organization.
- The consumer is the person or entity who obtains products or services for their own use.

¹ Sayer, Natalie and Williams, Bruce (*Lean for Dummies*, 2012)

² For more information about Lean, visit <http://www.lean.org/whatslean/>

When discussing Business Process Management (BPM), it is important to note that BPM is now often used interchangeably with the term Business Process Management System (BPMS). In this Article, BPMS refers to optimizing processes with the assistance of technology, using a BPMS that will allow an organization to fully document and then automate their processes.

When selecting a BPMS that will allow an enterprise to leverage the Lean methodology, enterprises should require their selected BPMS to have the following features:

- One database repository for process documentation models, information, analytics, reports that support continuous improvement.
- Publishing features that support communication across the organization.
- A built in framework and methodology that organizes the enterprise's business processes in a standard way.
- Tools to monitor, measure, govern and control processes.
- The ability to automate those processes.

By combining BPM and Lean (BPM /Lean) your enterprise has the ability to optimize processes and the ability to take the journey through the continuous improvement life cycle all the way to automating solutions with process control and governance.

Introducing Pete Jr.

Pete Jr. is the second generation owner of Pete's Pizza Palace, with net sales of approximately half a million dollars a year. Pete Jr. employs a staff of nine, including a business manager, two order takers, two pizza chefs and four delivery drivers. Pete's Pizza Palace only offers delivery service in a major suburban market. Six months ago, Pete Jr. embarked on a major end-to-end rationalization of his business processes with the goal of increasing efficiencies and lowering the cost of business. As part of his BPM project, he purchased a BPMS to standardize the pizza making process. Pete Jr. has seen success in BPM – automating his process meant that he could practice just in time ordering, and his ordering costs are have decreased.

Pete Jr.'s BPM/ Workflow Automation project has not been a universal success. He has noticed that for the last several months his net sales figures have been dropping – an average of eight percent month over month.

Pete Jr.'s father believed that the customer is always right. As a result, Pete's Pizza Palace has always offered customers 50% off their next pizza if they are not satisfied in any way with the pizza they ordered. In addition, if an order is wrong, a new pizza is delivered and the customer gets to keep the wrong order. Pete Jr. has a problem – his business can't sustain the financial loss. Pete Jr. can't discontinue his deal because he'll lose business to his competitors, and more than that, he won't be doing the right thing for his customers.

Pete Jr. starts asking questions about why customers are not satisfied and he learns that:

- About 30% of the time customers aren't satisfied with the pizza they receive
- When customers aren't satisfied, 90% of the time they are unhappy because the pizza arrived cold
- About 25% of the time the pizza has the wrong ingredients
- 600 pizzas a month are considered unsatisfactory by the customers and Pete Jr. will refund customers 50% off their next pizza for about 300 pizzas.

Pete Jr. thinks about the problem. He's pretty sure that his automation system is state of the art and it can't be the problem. He determines that the pizza is cold because the insulated boxes are not adequate. He purchases top of the line insulated boxes only to find pizzas are still delivered cold. Pete Jr. also thought that a GPS would give the driver the most direct route because getting the pizza there faster means it will be warmer and reduce his fuel consumption costs. Fuel

consumption has stayed about the same and Pete Jr. has spent \$20,000 to put the changes in effect. After a month, there are still complaints.

Pete Jr. is at his wits end and after reading an Article in *Pizza Quarterly* about Toyota and Lean, he hires a Lean practitioner named Laura.

Understanding Automation and Lean

Laura works closely with Pete Jr. to understand exactly what is going on his process, so they can understand exactly where the failures in the process are occurring and make sure that they are fixing the right thing.

Laura explains to Pete Jr. that the Lean process is fully supported within his BPMS and what Pete Jr. has done in his BPMS journey is good work that can be enhanced by Lean. Pete Jr. has already implemented the effort of standardizing work in order to measure and then improve. BPM supports that cycle by documenting standard work in process models as well as designing, executing, monitoring and measuring, and governing processes with the support of technology. The Standardize / Measure / Improve cycle is shown in Figure 1.

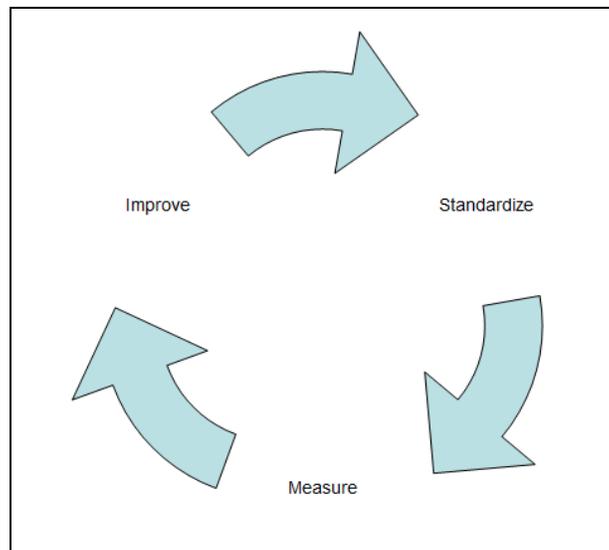


Figure 1: Standardization Cycle

Laura explains that she will use the PDCA (Plan / Do / Check / Act) cycle to solve Pete Jr.'s problems. The first step will be to plan and in the plan portion of her engagement she will examine:

- The background of the process
- The “as is” process
- The process problems
- The process goals and targets
- Ways to improve the process
- The process baseline measurement and metrics that determine if the process meets goals and targets

She will use all of this information to complete the Do, Check and Act portions of the cycle. Using this cycle will guarantee that Pete Jr. solves the problem in the most effective way and set him up for continuous improvement. Laura explains how using the PDCA cycle will raise several candidates for improvement, but the focus of Lean is incremental continuous improvement. Accordingly, she will use her Lean skills to locate the best “bang for buck” to solve Pete Jr.’s problems.

Laura draws this diagram in Figure 2 to show Pete Jr., what the steps will be in his process improvement effort.

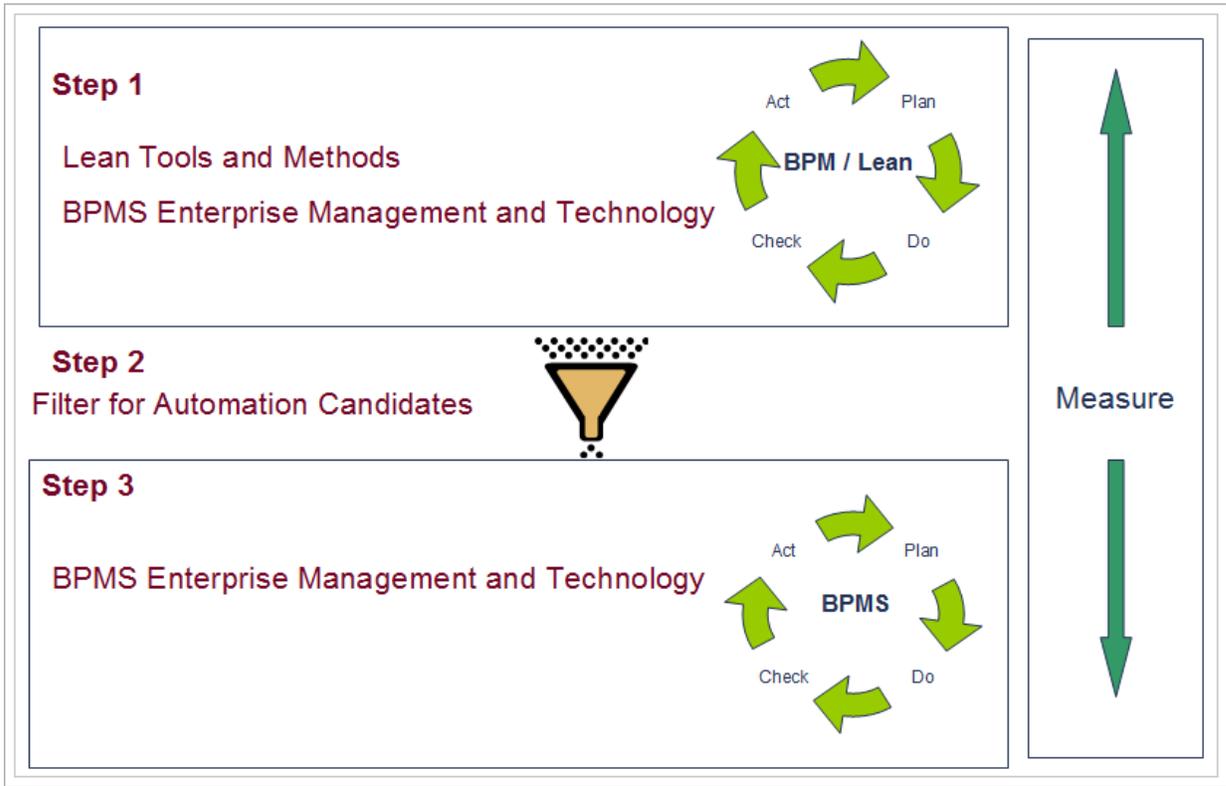


Figure 2: PDCA Cycles with BPM System

Lean Tools

At the start of the engagement, Laura tells Pete Jr. that she will be using some Lean tools that he may not have seen before, including Lead Time Analysis, *Gemba*, 5 Why’s and Spaghetti Diagrams. She explains that these tools are used to measure, identify, and analyze waste in the process. These are not the only tools that she could use; Lean offers many tools and methods that are used to analyze the “as is” process to find areas for improvement.³ This table shows the descriptions of the methods and tools that Laura thinks are a fit for this project:

Tool / Method	Description
<i>Kaizen</i> Event	<i>Kaizen</i> events are incremental continuous improvement projects that are focused on increasing process value and reducing waste.
Value Stream Map	A graphical representation of how all the steps in any process line up

³ Michael George, David Rowlands, Mark Price, John Maxey ([Lean Six Sigma Pocket Toolbook](#) 2005)

	to produce a product or service for a customer.
Lead Time Analysis	The total amount of elapsed time from the time a task, process, or service is started until it is completed broken into value-added and non-value added time
<i>Gemba</i>	Japanese word for the activity of going and seeing where the work is performed
5 Why's	A method that continues to ask why to get to the root cause
Spaghetti Diagram	A drawing to show the transportation or movement of the product or service.
SIPOC	An evaluation of Supplier / Input / Process / Output / Customer that provides a customer centric view of a process and its deliverables
6S	An exercise used to create and maintain an organized workspace: Sort, Set in Order, Shine, Standardize, Sustain, and Safety. The sixth S was added because of its importance, Safety, but it should be noted that Safety is an outcome of a 5S exercise.
Project Evaluation Matrix	A method of evaluating the business impact with the ease of resolving a problem to identify which efforts should be done as soon as possible, which require a project approach, and which should not be addressed.

Figure 3: Lean Methods and Tools Definitions

Laura then suggests Pete Jr. start by having a *Kaizen* event. *Kaizen* events are incremental continuous improvement projects that are focused on increasing process value and reducing waste. The events are short – five days or less - but will ensure that Pete Jr. stays focused on incremental change. Incremental change is by nature respectful of people and how they understand and adapt to change. Laura explains that Lean is always respectful of people; people do work, and without the co-operation of people, no Lean effort can ever be successful. Lean is a combination of culture, methods and tools.

Good monitoring and controlling processes have their roots in the planning stage. It seems counter intuitive, but during the planning stage, the *Kaizen* lead will think carefully about measuring, monitoring and controlling the process. Good metrics are always linked to outcomes. Good measurement hinges on measuring the right metric, at the right stage and understanding how each stage is a transformation, and how that transformation contributes to the end goal of a process. Within the planning stage, this takes the form of understanding what objective or requirement a particular process satisfies.

Laura knows that even the most experienced process modelers will abstract or consolidate processes, removing the full and actual variation. She knows to really solve Pete Jr.'s problems, this tendency to “put the best foot forward” must be removed, and processes, with the full scope of variation, work arounds and *muda*⁴ must be documented. She will do this by going to the *gemba* of the process and reviewing the documentation against how the process is actually performed.

Pete Jr. reluctantly agrees to create a Kaizen team because he will be paying for the employees' time but he knows something has to change. Laura and Pete Jr. identify a team of

⁴ *Muda* is Japanese for any activity that consumes resources but creates no value. There are two forms of *muda*: Type-1 is necessary for the process and Type-2 is both unnecessary and non-value-added.

representatives from the order takers, the cooks, and the delivery guys. These representatives can speak to the whole process from order taking to getting the pizza to the customers.

The first thing Laura does is educate the *Kaizen* team about waste so that they are prepared for the *Kaizen* event. The wastes are (using the acronym) DOWNTIME:

- Defects
- Overproduction
- Waiting
- Not engaging employees
- Transportation
- Inventory
- Motion
- Excess processing.

Laura makes sure they understand that the wastes are identified from the perspective of the customer / consumer. For example, what would Pete Jr.'s Pizza Palace employees do if they didn't deliver the pizzas (transportation) or move around the kitchen (motion)? One of the delivery drivers mentions that he agrees pizzas need to be transported but there is waste if the route is not efficient. Laura knows this group is ready to "think Lean."

Laura is ready to facilitate the creation of the Value Stream Map (VSM), which uses the existing BPMS artifacts to create a different view of the "As-Is" process. Laura asks for a day with representatives of the different process areas. Laura explains that sometimes problems occur because the performers of one process area do not realize the impact of their work on the next steps. Pete Jr. reluctantly agrees because he will be paying for the employees' time but he knows something has to change. Laura and representatives from the order takers, the cooks, and the delivery guys create the VSM that has a focus on:

- A clearly defined product or service
- An understanding what the customer wants
- The high level processes with the activities and information currently performed to deliver that value to the customer
- The value-added time for the processes from a Lean perspective of customer value and what portion of those activities meet the value definition
- Information from a team representing SIPOC⁵ (Supplier/Input/Process/Output/Customer) that know the process
- Validation of the process using *gemba*
- Listening to people about issues (e.g. wastes) in the "as is" process.

Laura always uses traditional methods to create her VSM. She wants participants in the VSM process to focus on the goals of the VSM and not trying to use a tool. After the VSM is created, she enters the information into Pete Jr.'s BPMS tool. Laura tells Pete Jr. the extra effort will pay off because you can't file or reuse data from butcher paper and post-its! Storing the VSM information in a BPM repository assists with reports, analysis, project communication, and the next steps in the BPM / Lean journey. In short, having a BPMS actually eliminates waste (e.g., time spent manually calculating the time line, reusing the objects in the model, and creating reports that assist with analysis).

⁵ SIPOC – Supplier / Input / Process / Output / Customer

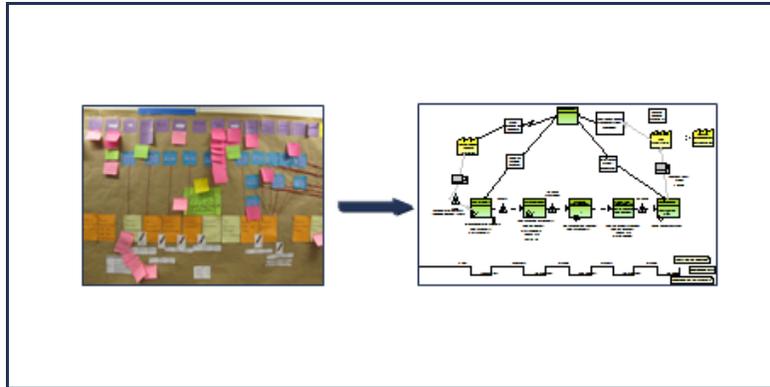


Figure 4: Traditional Hand Crafted VSM and BPMS VSM⁶

By entering the data from the VSM into a BPMS, Laura is able to run analytic reports from the BPMS like Figure 5 that show information about the *Kaizen* project team, the process owner, process steps, resources, lead time, where the wastes are, and the process step costs. This report provides a standard way for comparing before and after results for management approval, documenting knowledge management, archiving and the on-going task of proving process improvement value.

Kaizen Process Mapping: Process1												
Process Name			Value statement through the eyes of the customer:				Type of Waste		Transport			
Subject Process Name							Inventory		Wasting			
Process Owner							Over production		Inspection/rework			
Date Kaizen Assessment												
Reason Kaizen Assessment												
People Involved												
Seq	Process/Step	Process/Step Identifier	Step	Resources	Value added	Waste between step	Waste	Type of Waste	Start	Duration	End/Reassessment	
Process 1		100,00										
Process 4			Group	3								
Process 5												
Process 3	1,00		Person type					Inspection/rework				
Process 2	0,40		Position					Transport	12,00	62		
Process 2	0,40		Organizational unit type					Transport	12,00	62		
		101,0			0	0	2,0			24		
		83,33			0,00	0,00	1,53					

Figure 5: Kaizen Report from BPMS⁷

Getting to the Root of Pete Jr.’s Process Problems:

Laura uses the “5 Why” method to show Pete Jr. what his true problems are. The “5 Why” method is an iterative process that starts asking questions about why problems exist. (Note: Some issues take more than five whys and some less.) The first “5 Why” is to address the issue of customers getting cold pizzas.

Why 1: Why is the pizza cold when it gets to the customer?

Response: The pizza left the Pete’s Pizza Palace lukewarm.

⁶ BPM VSM courtesy of SAG ARIS Six Sigma Extension

⁷ Report courtesy of Software AG ARIS Six Sigma

Why 2: Why did it leave lukewarm?

Response: The new workflow notifies the delivery staff of an impending delivery when the order is received.

Why 3: Why does that cause a problem?

Response: The workflow is coded to allow 30 minutes to make and bake a pizza.

Why 4: Why does this cause a problem?

Response: The pizza only takes 15 minutes to make.

Why 5: Why does this cause a problem?

Well, the pizza sits for 15 minutes before it is boxed up for delivery. It gets cold.

So, the root cause of the cold pizza starts when the pizza is still at the pizza parlor and it's not in an insulated box and waiting for delivery.

The second issue is to address the problem with *wrong orders*.

Why 1: Why is the order wrong?

Response: The pizza left Pete's Pizza Palace with the wrong ingredients.

Why 2: Why are the ingredients wrong?

Response: Customers sometimes ask for additions or deletions to a standard pizza. For example, they may want a Hawaiian pizza with no pineapple and the cooks at Pete's don't see the request to hold the pineapple.

Why 3: Why don't the cooks see the request?

Response: Well, when Pete Jr. moved to an automated flow, the flow assumed customers would only order standard pizzas. Pete Jr.'s staff developed a work around – to hand write the changes to the orders on the bottom of the printed order ticket.

Why 4: Why does the work around cause problems?

Response: Well, sometimes the cooks don't see the handwritten request and sometimes the cooks make a mistake when deciphering the handwriting on the request.

The root cause of the wrong orders is that the automated system does not help with non-standard orders and the workaround of handwriting the changes isn't working.

Pete Jr. and his employees are surprised with the results of the "5 Whys". The order takers didn't know that their handwriting was part of the problem. Pete Jr. keeps thinking about how much he has spent on the automated workflow and insulated boxes. Laura reassures Pete Jr. by letting him know that his automation system solved some problems and it caused some problems and this, unfortunately, is common in the world of automation. The importance of Lean is that it can solve this problem with its focus on continuous improvement.

Pete Jr. now understands why his employees are frustrated. This pizza parlor hires people from the neighborhood. Often, their friends and parents were impacted by cold pizzas and wrong orders. The employees shared that the last three employees who left went to restaurants where things were not so chaotic. It turns out that Pete Jr.'s earlier solutions didn't work because they solved problems that didn't exist.

The next Article will address more of the planning around what Pete Jr. and his *Kaizen* Team will do to resolve the root cause problems and change management. Don't miss the prioritizing of changes, taking a look at organizational readiness for change and watching the impacts (positive and negative) on the processes.

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