

Transformation using Lean Six Sigma measures for service processes

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One of my challenges as a Lean Six Sigma specialist working within the service sector is convincing people that Lean Six Sigma techniques can work to help transform service processes as well as manufacturing. Sometimes, even the word process is foreign to the service world. People think they are performing tasks. The typical issue obstructing the use of Lean Six Sigma methodology as a transformation tool, however, is the lack of process measures that are critical for understanding and improving processes. There are several things that contribute to this issue, including not being able to see the process happening, not understanding customer needs, general chaos or interruptions to the process, and the failure to know what to measure about the process. In this article, I would like to shed some light on how to define the right process measures and give some examples of interesting and useful measures that can aid in continuous improvement activities in the service sector.

Determining what we should measure about our processes is not that difficult. We start with understanding what our processes are, work to truly understand what our customers want, and then convert their wants into things we can measure. Understanding our customer is a foundational cornerstone upon which Lean Six Sigma is based. Companies are in business to make money, but it takes customers buying your product or service to generate that income. We must continually strive to keep up with the wants and needs of our customers. We must understand not only what they wanted yesterday, but also what they want today, and might demand tomorrow. Customers may or may not know something about our processes, but they usually do know something about what they want. Most likely, however, they will not articulate them in a way that we can translate directly to something that we can measure within our process. They may also not volunteer the information; however, with a little bit of time and effort, we can determine those needs. So how do we go about defining process measures to help us transform our processes using Lean Six Sigma?

Understand and document our processes

The first step in defining measures for our process is to understand and document the process itself. This is done by

going out and talking to people who perform the process steps, and recording the as-is process. Sometimes we see the process more clearly if we look at it in reverse order, from back to front. Nothing should be taken for granted. Nothing should be assumed to be happening. We should use the process map as an aid to understanding and documenting our process for delivering our product/service to our customers. Process mapping can be done to any level of detail needed and each process we have should be mapped.

Figure 1 shows a generic high level process map used to help us better understand our process, the product/service we provide, and what the customer might see.

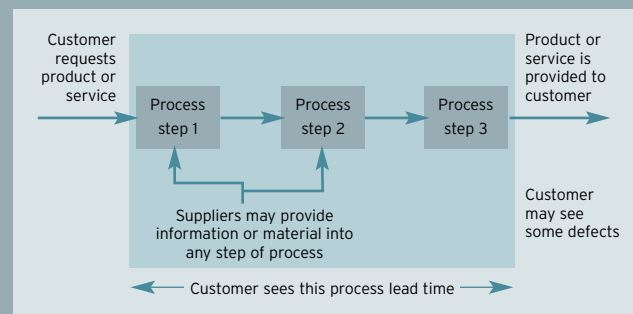


Figure 1 - A high-level process map

The next step in defining our process measures is to tie together our process, customers, and suppliers. We use a fairly simple, but powerful tool called a SIPOC. SIPOC is an acronym for suppliers, inputs, process, outputs, and customers. Figure 2 provides an example of SIPOC for an accounts payable process.

Similar to the way we do the process diagram, the SIPOC is also constructed from end to beginning. We start by listing our customers. This list of customers can be all inclusive, such as any users of the product or service, or even more specific, listing only the immediate customers of the process, some of whom may be internal to the organization. We then detail the outputs that our customers get from our process. We show the process, which we defined in our process map, in the center.

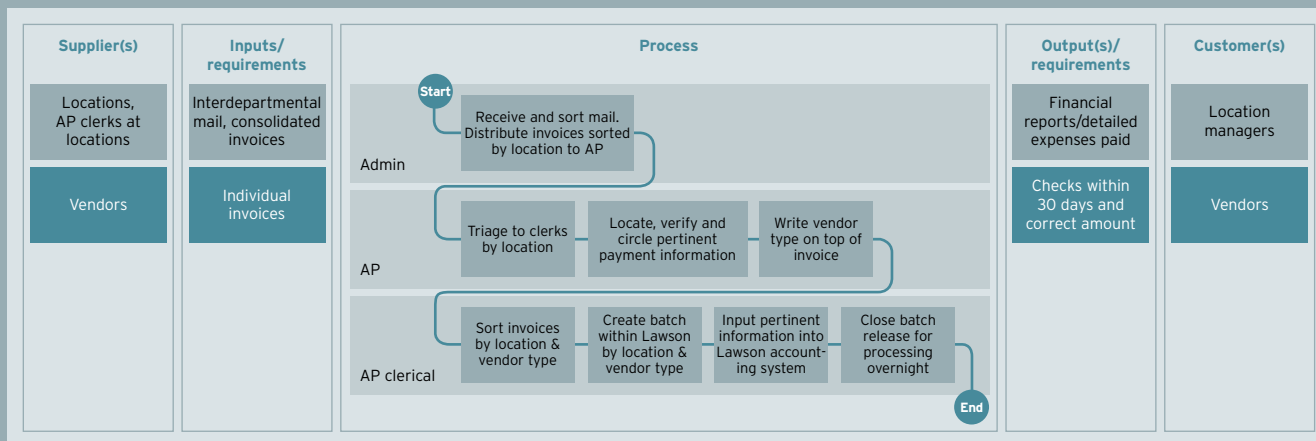


Figure 2 - SIPOC diagram showing an accounts payable process

Then we list all of the inputs needed to perform the process. Some of these inputs may come from the customer ordering our product or service, others may be from other divisions of the organization, and some may come from vendors or suppliers outside our organization. Lastly, we list our suppliers. Again, this listing can be all-inclusive, or fairly specific.

Gather the voice of the customer (VOC)

Now that we have mapped our process, and understand it, and what we provide to our customers, we need to find out what our customers really want from us. How we gain an understanding of our customer needs is pretty simple, yet often strongly resisted by many organizations. All you need to do is to go and ask the customer what they want. There frequently is a fear that the customer is going to tell us something bad, or we are going to open ourselves up to ridicule, or undeliverable products. But the fact remains that if we are going to provide what our customer desires, we must understand what that is.

Most Six Sigma methodologies require that we ask the customer what they want – ‘gathering the voice of the customer’ or VOC. There are several techniques for gathering this information, including surveys, focus panels, interviews, call center logs, customer complaints, warranty information,

trade shows, and even watching what our competition is doing. Once the best avenue for gathering is decided upon, go do it!

Gather input from the business as well. We call that the ‘voice of the business’ (VOB), but in reality we could consider the business a customer as well, and gather information from them in the same manner. Business measures are often closely linked to process measures, but fall more into the categories of revenue, expenses, and assets.

Change VOC into measures

The true challenge to getting measures or metrics for our business is to convert the voice of customer information into meaningful, measurable inputs and outputs from our process. Sometimes it may take several exchanges between our organization and the customers to clarify exactly what they mean by what they say. For example, if you are an institution that extends credit to consumers to buy houses, you might process loan applications. Upon going out and surveying your clientele, you determine that most customers are not satisfied with your service. How are you going to measure service within your process? Figure 3 is an example of how we might clarify vague and sometimes ambiguous information that we

Voice of the customer	After clarifying the key issue(s) ...	Customer requirements
"I don't like your service!"	"It takes too long for me to get a disposition regarding my loan application."	Disposition of loan applications should take 24 hours or less (as measured by the time between submission of application and return notification of approval, or disapproval)
"I don't like your service!"	"No one calls me with my loan application disposition."	Customer is verbally notified of application disposition (as measured by initials in the 'customer notified' box in the database)

Figure 3

may receive from our customers, and get to the point where we can actually measure something about our process.

Could we measure service? Probably not, but can we measure the amount of time it takes us to process a loan application from the time it is submitted until we return an approval or disapproval notification to the customer? Yes!

Then we use a simple matrix, sometimes documented in conjunction with the SIPOC, indicating which measures fall into the categories of quality, speed, cost, safety, and regulatory compliance. An example of this matrix is shown in Figure 4.

Each item or issue that is a concern to either our customers or our business can be investigated and clarified this way, leading us to measures of our process(es). Typically, measures determined in this manner will be output measures – measures of the outputs of our process. We then need to determine and document inputs, and within process measures which will help us better understand our outputs. These measures will help us predict the output, if you will. We use the matrix in Figure 4 to define and document the input and process measures as well. Some of the functionality of this matrix comes from categorizing the type of measure, because thinking in this manner forces us to ask if we could or should measure something within each category. We might strive to measure a lot of things about our processes – so that we can make decisions on multiple levels – and drive

Input	Process	Output	
<ul style="list-style-type: none"> Date that invoice is received at AP department Date that service was completed 	<ul style="list-style-type: none"> Clerk time to identify and circle pertinent information on each invoice Clerical time to process a batch of invoices by location and vendor type 	<ul style="list-style-type: none"> Date that check is issued to vendor 	Speed
<ul style="list-style-type: none"> Vendor number Cost for services provided Location where services were provided 	<ul style="list-style-type: none"> Information added to invoice by clerk that is wrong Changed dollar amounts on invoices due to outstanding debits or credits for vendor 	<ul style="list-style-type: none"> Checks issued in error (amount) as a % of total checks issued for check run Checks issued in error (vendor) as a % of total checks issued for check run 	Quality
<ul style="list-style-type: none"> Internal mail postage cost 	<ul style="list-style-type: none"> AP clerk hours AP clerical hours 	<ul style="list-style-type: none"> Manual check run costs (includes hours and materials) 	Cost
n/a	n/a	n/a	Safety
<ul style="list-style-type: none"> Month of service 		<ul style="list-style-type: none"> Financial reporting must be done within 60 days of month end 	Regulatory compliance

Figure 4 - Matrix of measures of the inputs, process, and outputs for each category.

projects on multiple customer concerns. However, the caution that I would give anyone setting up measures for their business is that unless the measurement is automatic, such as financial information maintained in our business's database, which can be recorded and accessed electronically with minimum effort, we need to make sure that we use the information. This is especially true of manually recorded data. If the data is not used (monitored and posted, and used for management of the business), the associates performing the documentation will rapidly become disillusioned, and the data validity will come into question – or the data will no longer be recorded.

Another useful tool at this point is a data collection plan. It is a step-by-step process documenting each measure, its definition, how the item will be measured, who will measure it, how frequently and for what purpose it is recorded, who needs the information, and where it will be displayed¹.

¹ You can find some useful articles on data collection plans at www.isixsigma.com/articles/

Examples of useful input, process, and output measures

The following is a list with a short example of some measures that you might use in your business:

Cycle times - Define clearly the start and end points for time measurements. Example: in the title insurance business, you might measure the time from when you get a request for title services and when you provide back the title commitment. You could also measure the time within the process between when you send information out to the county representative and when you get the full title chain back from them.

Defect rates - Clearly define what is meant by defect, and if a given product can have multiple defects. Example: in any service business where you gather information, or provide information, you might count the number of times information is wrong (typed wrong, entered wrong, omitted, etc.).

Service rates - Define how you are going to measure the rate at which you can provide service (and it should be tied to the rate at which your customer expects that service to be completed). For example, you might measure how many loans your department can process per hour. You might measure how many requests you get an hour, or a day, and how many are completed in an hour or a day. You could even measure how many products are still in process at the end of the day.

Cost per service/product - Define clearly what costs you will include. For example, you can include the number of employees in all departments related to that service and the labor rate that you pay them, as well as the number of services/products they provide.

Rework - Define clearly what is meant by rework. For example, how often does the Quality Assurance Department have to correct something on a commercial loan application?

Quality - Be extremely careful of how you define quality. Quality is very subjective. An example of a quality measure

might be the number of errors that occur in any type of text field in your product or service. It might be the number of reports or services that your customer returns to you for correction. It might also be your failure rate for meeting cycle time targets. Another measure of quality might be the number of times that an error has to be corrected in your database. Think of quality as any way that the product or service can fail to meet customer requirements.

Conclusions

Measuring the performance of your processes is the first step in transforming your business. If you do not know something about your business, then you cannot improve it. I believe you should have measures in place for understanding your business performance all the time. They should be continuously measured, and whenever possible put on some type of control or metric chart which allows you to monitor trends that are occurring. When you have these measures, you can then make improvements whenever it is determined that you have a gap between where the processes are performing and where you need to be performing to compete. In this article, I have discussed establishing those measures, and given some examples of measures within the financial industry. I have also shared some tools, such as the SIPOC, measures matrix, and how to clarify your customer's needs. I hope you have found it useful.