

“CYCLE TIME”

QUALITY TOOLS

Lean

Description of Cycle Time

Cycle time is the amount of time to carry out an activity, process step or process, measured in units like minutes, hours, days, months or other meaningful unit in the context of the subject matter. When it is associated to a process from the stage of receiving a demand from the client and delivering the product or service to the client, cycle time is called Total Lead Time (LT).

When to use Cycle Time

Time is an important measure of efficiency and deeply affects customer satisfaction, when it comes to providing services, or overall costs, when it comes to using resources to develop a product.

Cycle time calculation increased its importance further from Lean Value Stream Map (VSM). When using VSM, each step of a process is measured in terms of its cycle time and, depending whether the step is value added or non-value added, used to calculate the process efficiency.

How to use the Cycle Time

There are some steps to follow when collecting and using cycle times:

1. Develop a Value Stream Map or a process flow with all the process steps.
2. Identify and document the time to carry out each step of the process and the process total lead time.
3. When developing a VSM, classify each step in value added (VA: it adds value to the customer), non-value added (NVA: it doesn't add value to the customer) or Business Value Added (BVA: it adds value to or supports business).
4. When developing a VSM, calculate process efficiency through the formula Process Efficiency (PE) = Sum of all VA time / LT.

The process steps with bigger cycle times are the ones to be considered as improvement opportunities.

Tips on use of Cycle Time

1. It's advisable to balance the cost of collecting a more precise cycle time for each process step against the return on this measurement. First one should ask if cycle time estimates could suffice when starting improving a process.
2. When it comes to reducing time waste, and in order to achieve a good return on the measurement and improvement efforts, one should work initially on good estimates for cycle times. Then one should prioritize the biggest cycle time and follow from bigger to a smaller cycle times.
3. Another important metric to be collected in addition to cycle time is the time between the process steps as it might represent various forms of wait and time waste.
4. When collecting cycle times for services, one should take into consideration the client perceived time as well. Sometimes it's not feasible to reduce the client wait time but it's possible to reduce client's perceived wait time.
5. One useful technique when developing a VSM and registering cycle times is to "be" the "thing" that is flowing through the process and follow through step by step collecting the metrics.
6. Electronic spreadsheets turned to be useful tools to register each step of the process, cycle times, wait times and calculate process efficiency automatically. Nevertheless there are some data gathering in the field that pencil and paper will suffice.

Application of Cycle Time

Inquiry investigation in an audit organization is a complex task. In order to rapidly focus on the steps that took most of the auditors effort, a process improvement team started by estimating cycle times for each step in a high level process map. As a result, they could see that the review phase was taking more than 70% of the Lead Time, focus the improvement on this phase and get a better return on their efforts.

References

George, Michael L. 2005. *The Lean Six Sigma Pocked Toolbox*. McGraw-Hill, New York, NY

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