White Paper

Adopting BPM for Continuous Process Improvement

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His other knowledge areas include application of Balanced ScoreCard in BPM, Business Motivation Modeling, Operating Modeling and Lean Six Sigma.

The four key pillars of adopting business process management include, organizational transformation (from functional centric to process centric), continuous process improvement (innovating with better practices), performance measurement (can't manage what you are not measuring), and lastly BPM technologies (enterprise application that enables change).

Business process improvement (BPI) aims at to improving improve the effectiveness, efficiency and adaptability of the day-to-day business operation. BPI initiatives that focus on individual business function ignoring the end-to-end business process may end up having a detrimental effect on the overall business performance. In addition, it is not uncommon to see BPI projects running in isolation to other business and technology transformation efforts. Such BPI initiatives could achieve short term improvement but a challenge to maintain and sustain continuous process improvement in the organization. The adoption of business process management (BPM), a collection of methods, policies, metrics, roles and technologies, is critical both as an operational and technology strategies strategy to meet the dynamic environments businesses is are in today. These methods, policies, metrics, roles and technologies can be grouped into four key categories of building blocks for adopting BPM – organisational organizational transformation, process improvement, performance measurement, and BPM technologies. As building blocks, they are interdependent and work in synergy. This paper explores three of these building blocks,, from process improvement methods, organizational transformation, and BPM technologies, particularly. The paper also considers how BPM technologies support the effort in continuous process improvement.

Business Process Improvement Methods

There are three main methodologies widely used today for process improvement initiatives – Six Sigma, Lean, and Theory of Constraints. Six Sigma and Lean are methods that originated from a streamlining of manufacturing processes – Six Sigma in Motorola and Lean in Toyota. The following is a short introductions for each of these methods:

- Six Sigma was developed by Motorola and focuses on reducing variation in products and processes to solve business problems. Its desired outcomes include reduced defects, reduced cycle time, and increased throughput. It uses statistical methods and structured investigations to comprehend the fluctuation of a process and its determining elements. It is based on the assumption that the outcome of the entire process can be improved by minimizing the variation of these elements. Consequently, by reducing the variation of all processes, an organization can improve its overall performance.
- Lean is based on Toyota Production System (TPS). It has evolved and been widely adapted as a business improvement practice outside of the manufacturing sector. Lean focuses on the removal of waste, i.e. anything not necessary to produce the product or service, i.e. anything not adding value to the product or service should be removed. A very common measurement used in Lean is “touch time”, measuring the duration a product is actually being worked on by the workers. Hence its emphasis is on the flow of the work item. According to Taiichi Ohno (1988), the goal of TPS is to ‘reduce the timeline from order to cash by removing muda or non-value added waste.’

Although commonly practiced, unlike Six Sigma and Lean, the Theory of Constraints is not so well documented as a methodology. It’s focus is on system improvement based on system thinking. A system is defined as a collection of interdependent processes. Using the analogy of a chain as a system, the constraint in this case is where the weakest link is. In improving process, the method contemplates on the process that slows down the flow of the entire system, or the bottleneck. It is based on the assumption that there is a constraint or bottleneck in every system, and the constraint dictates the output of the system. The goal is to produce positive effects on the flow time of a work item through a system. A common example is changing a series of sequential activities to parallel activities to improve overall flow time.

Secnario 1
An improvement within a business function (A) was achieved by moving the problem outside that function to a downstream business function (B). Although A managed to improve its performance, B's performance dropped as it had to cope with a new problem.

Functional Process Improvement

There are many challenges for a business to maintain focus on continuous process improvement. One of them is a bias on improvement of functional processes. The process improvement methods mentioned earlier are commonly used for improving business processes within single business functions, and work well on improving individual processes. Having a siloed approach to the improvement of individual processes can have a detrimental effect on the overall ability of the organization to meet and satisfy its customers' needs.

One of the main reasons is the lack of accountability for the enterprise process or end-to-end flow of business activities. Process owners are normally identified for the individual functional processes, i.e. the business unit manager of the business functions assigned as the process owners. Hence, there is no person responsible for the end-to-end business process. No responsibility also means no monitoring of the performance of the end-to-end business process in satisfying the customers. With business unit managers sorely entrusted with improvement, it could potentially lead to improving the wrong things for the organization.

As a result of this siloed view, many business process improvement efforts have a strong tendency of focusing at a micro procedural level rather than on the improvement of the large cross-functional enterprise processes. The functional focus also leads to another short coming – the white spaces between the business units and functions are ignored. Consequently potential solutions are also buried away.

"In many organizations, the traditional functional view of the enterprise remains the predominant perspective. In this paradigm, activities and success are perceived in terms of power and authority defined by the organization chart. This is largely due to the simple fact that most leaders have a strong functional bias, which has been nurtured by both their academic and business experience."

Andrew Spanyi (2008)

In order to achieve an improvement outcome that meet customers needs, the efforts must be more than just a one off process improvement or reengineering initiatives. There must be a concerted and collaborative effort made in managing the organization's large, cross functional enterprise processes.

The next section introduces two key concepts of Toyota Production System (TPS) that formed an important part of process improvement in TPS.

Jidoka is a TPS concept which means autonomation or automation with human intelligence. It is one of the two main pillars of Toyota Production System. It refers to the ability to stop production lines, by man or machine, in the event of problems. Jidoka helps prevent the passing of defects, helps identify and correct problem areas using localization and isolation, and makes it possible to "build" quality at the process. In short it is a mechanism for continuous monitoring that triggers process improvement.

Jidoka and Andon in Toyota Production System (TPS)

One of the wastes in TPS or Lean is defects. In TPS, defects can be prevented by implementing 'fool-proofing' operations, i.e. by making mistakes physically impossible (*poka-yoke*) in assembly operations. In TPS manufacturing, components are designed in a way that there exists one single way of assembling them. If a problem occurs, it has to be discovered and isolated as quickly as possible. This is realized through the Jidoka concept where a process is stopped immediately when a problem is detected and the supervisor alerted.

A well-known method of Jidoka is the Andon cord, a cord running adjacent to assembly lines that enables workers to stop the operation if a problem is detected. Again it helps to focus on the problem and acts as a trigger for process improvement initiatives. Rather than identifying defective work items as the final inspection step in an assembly line, in TPS work items are inspected and checked at every step to prevent defective items from flowing downstream.

The Jidoka concept of detect–stop–alert is one of the critical success factors for achieving a continuous process improvement. Without an Andon cord in a business process or real time monitoring of day-to-day business operation, it is a challenge to implement continuous process improvement. The autonomation concept emphasizes on having an automated mechanism for a 'fool-proof' process control and real time monitoring that triggers continuous process improvement.

Adopting the Building Blocks for Business Process Management

According to IVI's IT-CMF, the term Business Process Management (BPM) refers to a collection of methods, policies, metrics, roles and technologies to identify, design, monitor, optimize, and assist in the execution of an organization's activities. It is the combination that enables an organization to be agile in meeting its objectives by efficiently introducing and improving new business processes.

In general, there are four key building blocks in constructing an effective BPM practice. The four building blocks are:

1. Performance measurement;
2. Continuous process improvement methods;
3. Business Process Management technologies ; and
4. Organizational transformation.

Figure 1: Four Building Blocks of BPM

In previous sections we have talked about the various process improvement methods which I will not repeat. The following sections focus on two of the building blocks as a part of the solution to the challenges identified earlier – organizational transformation and BPM technologies. Also keep in mind that the building blocks are interdependent and not in isolation.

Adapting a Matrix Organization Structure

Recall that the process improvement method itself is inadequate in achieving improvement of the end-to-end cross functional processes. Hence one of the aspects of organizational transformation is adapting a process centric organizational structure.

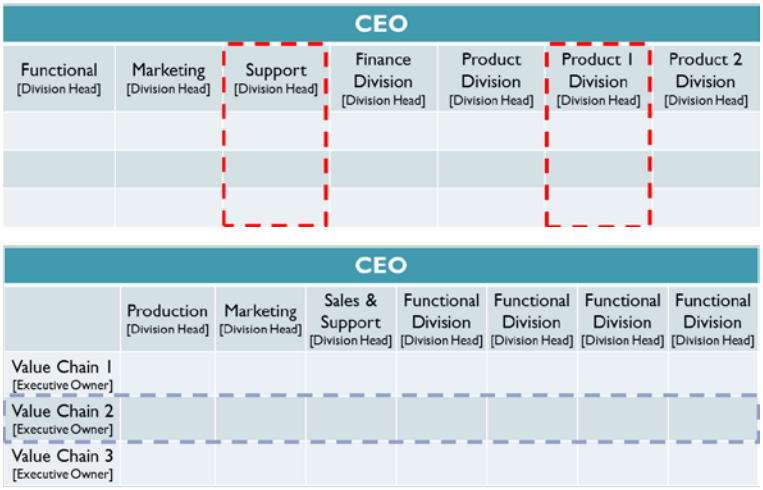

Figure 2: Function Based Structure versus Matrix Structure

A useful approach is to adapt a matrix organizational structure as a transition from a functional biased organization to a process centric organization. Figure 2 is an illustration of a high level view of a functional organizational structure versus a matrix structure where an executive process owner is identified for each value chain of the organization but maintains the function based divisions.

The adaption of a matrix organizational structure is the basis for creating accountability for the performance of the large, cross functional enterprise processes. Such accountability ensures deliberated and collaborative efforts among the functional units to manage the end-to-end processes, leaving no whites paces in between them. It will also align the improvement efforts across the functions without jeopardizing the overall performance. Also key to note is that the accountability is not just one off during a process improvement project but on-going in day-to-day operation.

Apart from transforming the organizational structure, there are also other aspects in the organizational transformation, including organizational culture that embraces quality, change and innovation.

Note: Avoid having a committee to be accountable for the end-to-end process, especially a committee made up of the different business units. However, the committee may be a good input to the executive process owner. It is the executive process owner that is accountable for the performance of the end-to-end process, not the committee.

Sustainable continuous process improvement is only achievable with the adaption of a process centric or matrix organization. Just imagine the situation described in scenario 1, instead of continuous improvement, the consequence of sweeping problems outside the functional space is a continuous fire fighting of patches at

the expense of downstream functions. Although process improvement projects may be able to improve individual processes, it is very difficult to sustain continuous process improvement in the long run.

BPM Technologies

The next building block is the BPM technologies. Again, to achieve continuous process improvement, the BPM technologies must be more than simple process design and modeling. It has to embrace the Jidoka or autonomation concept of TPS – a mechanism to enable detect–stop–alert practice in the day-to-day operation. Technology such as the Business Process Management System (BPMS) has the capability to monitor and automatically detect problem or enable a worker to raise an alert when problem is identified.

> A Business Process Management Suite (BPMS) is an integrated suite of software technology that addresses business users' desire to see and manage work as it progresses across organizational functions. A BPMS supports process modeling, design, development, execution via the runtime environment, and monitoring of process performance, in one package or system.
> **Source: Gartner Research**

The assignment, management and monitoring of a work item in a BPMS is similar to the Andon cord that allows the worker to alert their supervisor by reassigning the problematic work item. The automated monitoring enables timely corrective action to be taken and also initiates the process improvement initiative where repetitive problems are identified.

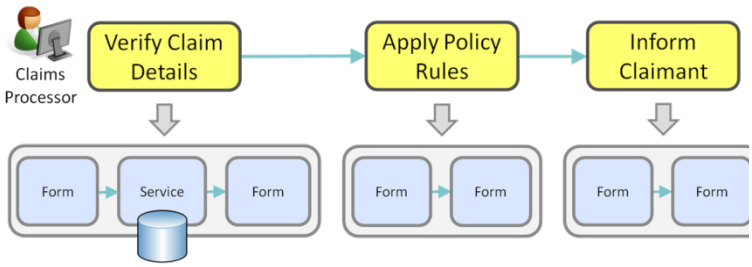

Figure 3: Illustration of Guided Process

A BPMS can also be implemented to achieve another principle of TPS – 'fool-proofing' a process. In such cases, the process automation does not remove the worker altogether but enforces a guided process (see Figure 3) that must be followed stringently by the worker with strict quality control in each step. Hence an incomplete or inadequate work item will not be passed downstream creating waste of rework.

In order to meet the fluctuations in demand from the market, a solution based on TPS is to create processes with sufficient flexibility to meet such fluctuations. In TPS, workers need to be skilled to handle multiple machines of different types. (see Figure 4)

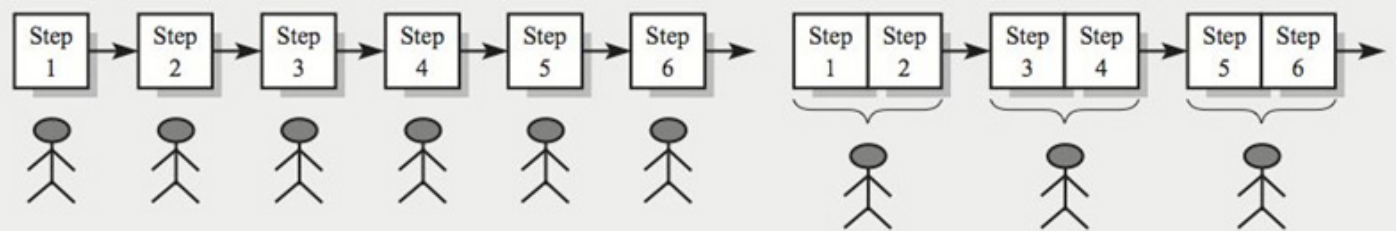

Figure 4: Illustration of Multi-task Flexibility in TPS

In other words, in order to meet variations, workers are trained to perform variation of activities or different types of activities depending on the demand. A BPMS is critical in offering such flexibility in process management. The workflow assignment management enables allocation of work items according to the varying allocation methods, availability, competency of workers, and demands. Of course, the workers are still required to be skilled accordingly.

Rather than promoting or comparing BPMS to other information technology, this section attempts to introduce the potential solution that a BPMS could bring to close some of the gaps in continuous process improvement, and as a key building block of BPM that aligns to the various concepts and practices in TPS and Lean.

Conclusion

The four building blocks are interdependent and not in isolation. Although BPMS could and should (as defined by Gartner) manage work as it progresses across organizational functions, it is more than just putting a BPMS in place. Without the adaption of process centric or matrix organization that puts emphasis on executive process owners, the BPMS will end up running functional processes and leaving the white spaces untouched. Similarly, running business process improvement projects without transforming the organizational structure will have a limited short term effect within functional units. Without the process management mechanism – BPMS – it is a challenge to roll out 'fool-proof' processes and enable on-going monitoring and process flexibility.

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