

Business Process Optimization: Combining Project Management and Six Sigma Best Practices to Better Understand and Optimize Critical Business Processes

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In order to secure a competitive edge in its respective industries, organizations are seeking ways to increase efficiency and guarantee successful execution of critical business processes. In today's global business environment, the importance of first-to-market, customer service, cost-competitiveness, and quality are key factors in determining an organization's success, or undesirable failure. The purpose of this paper is to demonstrate how organizations are able to achieve sustainable and effective process improvement by identifying how the combination of project management best practices with certain Six Sigma methodologies provides the structure and discipline required to identify process improvement opportunities, develop sustainable solutions, and lead organizations through the strategic change process.

It used to be said that a company could gain a competitive edge in its industry by executing first-to-market, offering products of superior quality, or being the price leader. The business sages of the past believed that a company could compete in only two of these three areas. However, during the 1970s and 1980s, Japanese manufacturers such as Toyota and Sony turned traditional business wisdom on its ear. Historically, the product lifecycle started when a company (typically, the market leader) brought its new product offerings to market first. Competitors followed by offering similar products of higher quality; then more companies entered the market offering comparable quality at a lower price. The Japanese showed that companies could, in fact, compete in all three strategies simultaneously and become industry leaders.

Traditional business has realized that "faster, better, and cheaper" are not the only variables consumers weigh when making buying decisions. Superior product service has become a key business process. Companies such as General Electric, led by Jack Welch, have evolved from a product-based company into a service company that makes high quality, innovative products. To dominate an industry, an organization must continually create new innovations and remain agile in order to respond quickly to change and effectively execute any changes. It needs to have the ability to pursue strategic initiatives with confidence including alliances, acquisitions, outsourcing, and global expansion. It also requires the means to consolidate its business during economic downturns, using cost effective new tools for business process integration. Achieving these outcomes first requires equipping executive management with process controls and accurate information to make educated decisions for strategic course corrections and realignment. Once decisions are made, these business process optimization projects require an organization to examine and pursue opportunities to reduce costs and cycle times, while increasing service levels or product quality.

Business Process Optimization

Defining a Business Process Optimization Project

Business process optimization (BPO) initiatives depend on the competitive environment an organization faces within its industry. For example, customer service value chain processes are very important in the financial services and government sectors where interaction with the customer is a main concern. Customer friendly applications to enable access to information, manage finances, and buy financial products are important features for financial service providers such as banks, insurance companies, and brokerage houses. Conversely, the top priorities facing many manufacturing companies focus toward supply chain programs and customer demand for self-service and access to information.

Regardless of the industry, a company's process optimization project must identify ways to make its business processes manageable, with formalized, actionable information about how, and how well, the process is executing. Not unlike any other project, a business process optimization project must define the scope of the process to eliminate confusion and set the project boundaries. It will identify the process improvement goals such as cycle-time reduction, customer service improvement, and/or cost reduction. It will identify the deliverables such as process maps, time studies, systemic enhancement opportunities, to name a few. Additionally, it will allocate the required resources including subject matter experts to define existing process strengths, weaknesses, opportunities, and threats. And, it will set a timetable for the development and execution of process optimization enhancements.

Managing Processes vs. Projects

It is important to differentiate processes from projects. Business processes consist of providing worth to a customer through value-added activities, moving work across functional area boundaries, and controlling process standards and measuring process execution. Business processes are typically event driven, such as the retooling and maintenance of a factory, printing a product catalogue, the close of a billing cycle, or solving a customer's problem in reconciling a checking account. These are activities that are typically replicated and repeated with specific resources allocated to a particular working group such as factory line workers or customer service representatives, to name a few. Business processes strive for three things: efficiency, agility, and meeting customer demands. While efficiency seeks to cut operating and cost of capital, agility seeks to cut the time required to develop products and services, and to respond to customer and market demands. Customer demands focus on customer retention and level of satisfaction.

A project, as defined by the Project Management Institute (PMBOK Guide, 2000 edition), is a series of activities and tasks with a specified objective, start and end dates, and resources (p. 4). A project consumes money, people, and equipment for the specified time period and defines what will be done, when to do it, and assures desired results are obtained. The tasks of a project are unique and generally not replicated or repeated, and once a project is scheduled, changes to the plan are avoided to ensure schedule conformance. While business processes strive for efficiency, agility, and meeting customer demands; projects strive to deliver the project objective on time and within budget.

Therefore, a process optimization project is a short-term endeavor an organization embarks upon to identify process inefficiencies, decide how to solve those inefficiencies, and assure optimization enhancements achieve the desired results without negative impact to ongoing operations.

Keys to Optimizing Processes

Earlier, it was mentioned that executive management must be equipped with the tools to make educated decisions to make organizational course corrections with agility. The keys to optimizing process performance and execution capability lay in the organization's commitment to define and continuously assess and update its process documentation. These documents, including process maps, input and output detail, resource assignments, cycle times, etc., formally define the scope of the process from initiation to delivery and serve as the process roadmap.

Once decisions are made, these business process optimization projects focus an organization to identify and examine opportunities to reduce costs and cycle times, while increasing service or product quality. Unfortunately, the vast majority of organizations continue to operate in silos, where core business process activities must traverse the traditional functional view and have neither an owner assigned nor measures process execution success. Many successful organizations such as Coor's Brewing, G.E., and Sony, to name a few, have mature business process management structures where primary and supporting business processes are well-defined, assigned an owner, measured for execution success, and scrutinized for efficiency, agility, and quality (see Exhibit 1).

Process management focuses on the management of cross functional processes. This involves continuous monitoring, evaluation, measurement (e.g., cost, quality, cycle time) and process innovation

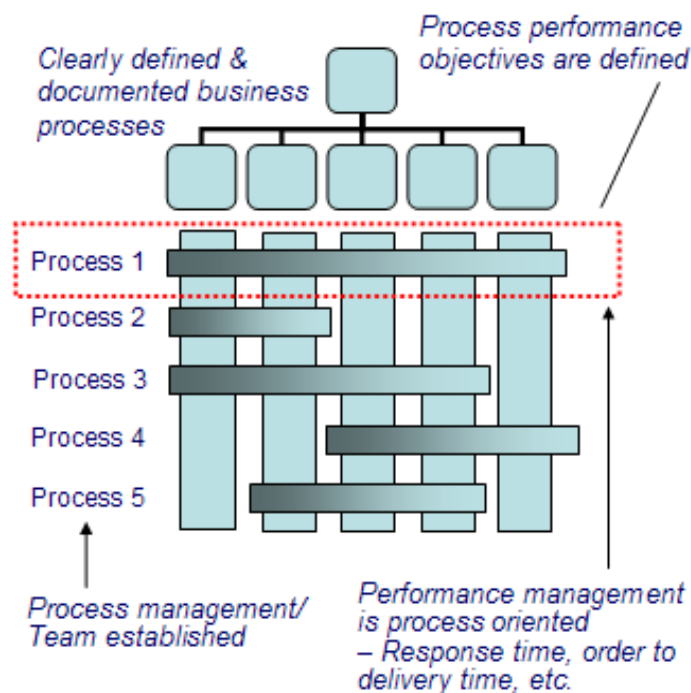


Exhibit 1 – Process Management

Formally defined processes and documentation provide an organization with visualization of high-level and detailed core and supporting processes. Maps and supporting detail documents define how the processes interact across functions, what each process step delivers, and how it produces its deliverables. Process owners possess the core or supporting business process, not necessarily the individuals assigned to work the tasks within the process. The process owner is responsible for ensuring the successful execution of the process and works to identify issues, root cause, and training needs. In order for the process to continuously execute successfully, communications must ensure that information flows vertically and horizontally across the company. A process owner must be able to monitor the external and internal flow of information. The purpose of process communication is to ensure employees are informed of performance information, and to control a company's progress toward its objectives.

Don't Compromise Quality for Efficiency

For many consumers, the quality of a product or service is as important, if not more important than the cost of the product or service. While the focus of many business process optimization projects is centered on optimizing efficiencies and reducing cycle times, companies must continue to ensure that business process optimization does not compromise the quality of the product or service the process delivers. Six Sigma methodologies can be used to embed quality into process optimization projects.

Six Sigma originated at Motorola in the early 1980's and is a methodology for disciplined problem solving and quality improvement. Six Sigma's goal is to nearly eliminate defects from any process, product, or service, limiting defects to merely 3.4 defects per million opportunities. To ensure organizational alignment, Six Sigma methodology requires all improvement projects must be integrated with the goals of an organization. The DMAIC methodology of Six Sigma (The Black Belt Memory Jogger, 2002) employs the following activities:

- *Define* – a discreet phase whereby customer needs are stated and processes and products to be improved are identified.
- *Measure* – determines baseline and target performance of process, defines input and output variables of process steps, and validates the measurement systems.
- *Analyze* – analysis of data to identify critical factors needed for process execution.
- *Improve* – identification of improvements (process, procedural, systemic, etc.) to optimize outputs and eliminate and or reduce defects and variation. Statistically validates the new process operating conditions.
- *Control* – establishes development of documents, monitors, and assigns overall responsibility for sustaining gains made by the implementation of process improvements.

BPO Project Management Methodology

Business Process Optimization projects follow the same method as defined by the Project Management Institute. Project management is accomplished through the use of the process group such as: initiating, planning, executing, controlling, and closing. As stated in the PMI PMBOK 2000 edition, "these process groups are linked by the results they produce – the result of one often becomes input to another."

- *Initiating* – authorizing project or phase is part of scope management.
- *Planning* – defining and refining objectives and selecting the best of alternative courses of action to attain objectives that project was undertaken to address.
- *Executing* – coordinating people and other resources to carry out plan.
- *Controlling* – ensuring that project objectives are met by monitoring and measuring progress regularly to identify variances from plan to plan so that corrective action can be taken when necessary.
- *Closing* – formalizing acceptance of project or phase and bringing to an orderly end.

The remainder of this paper identifies how Integrated Project Management Company combines project management best-practices with certain Six Sigma methodologies to provide the structure and leadership required to identify process improvement opportunities, develop sustainable solutions, and lead the organization through the strategic change process.

Combining Six Sigma and Project Management **Best Practices in the Initiating and Planning Process Groups**

Defining and Planning for a BPO Project

“Our plans miscarry because they have no aim. When a man does not know what harbor he is making for, no wind is the right wind.” – Seneca (4 BC – 65 AD)

One of the single, most critical activities to ensure the success of a project, whether it be in the development of a software application, drug compound, or optimizing a key business process, is the clear and concise definition of project objectives, goals and milestones in the project's planning phase. The purpose of the project must support the organization's vision and Mission Statements and require the support and commitment of top management. Business process optimization projects should contain a section in the Charter that defines the specific business process to be improved. This formal definition of the process optimization scope eliminates any confusion and formally defines the subjected boundaries. Additionally, it assists in the identification of the final product deliverable. For example, a fulfillment organization receives customer complaints on low order fill rates. The customer places an order for a quantity of 100, and receives a quantity of 90. The project objective, in this example, would be “to optimize the warehouse picking process to ensure an increase in the fill rates on customer orders from 90% to 98% by the 4th Quarter, 200X”. The process scope has been narrowed specifically to the picking process and provides the basis for the process goal.

Six Sigma is a data driven problem-solving methodology that requires the formal definition of performance standards. When planning a process optimization project, specific Six Sigma tools and activities are used to characterize customer needs and processes to be improved. These tools include the mapping of the high-level process in its current state, identification of the process existing performance measures (i.e., pick time, product staging time) and process financial analysis (i.e., resource cost, overhead). Specifically, Six Sigma seeks to identify the costs of poor quality (COPQ). COPQ includes; costs of rework, rejects, inspection, testing, and in the case of our fulfillment example, the cost of customer complaints. While a process optimization project benefit can be measured financially (hard), or non-financially (soft), most business cases are based on the hard benefits. In our example, the soft benefit of improved customer satisfaction should not be ignored.

Speaking of the customer, Six Sigma projects take the time to understand the needs of the customer. The project team must understand how the process problem links to the eventual customer. Six Sigma employs voice of the customer (VOC) research to gain this important insight. There are many different methods to researching the customer's voice. These include, but are not limited to the following:

- *Customer Complaint database – generally an acceptable place to start if the organization formally tracks issues.*
- *Direct Contact – if allowed, considers phone call surveys, focus groups, interviews at the point of provision.*
- *Indirect Contact – includes mail surveys, feedback cards, market research and competitor analysis.*
- *Become the Customer – order from your own distribution center; buy your own brand products, set up a new account with your own financial institution.*

Another effective tool to utilize in a process optimization project is the SIPOC High Level Process Mapping tool. The acronym, SIPOC, stands for suppliers, inputs, process, outputs, customer. It is a simple, yet effective tool to align the project team and all stakeholders as to the core process within the scope of the project. It is important to note that it is too early in the project to detail the existing process (that comes later in the Measure Phase). The following is an example of a SIPOC High Level Process Map (Exhibit 2):

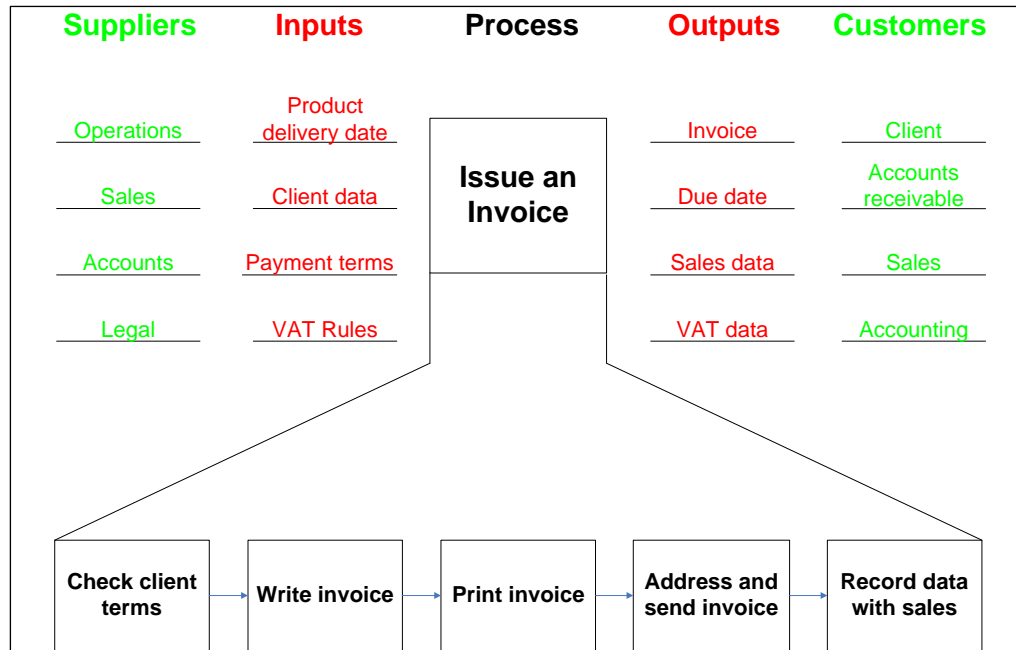


Exhibit 2 – SIPOC

The general approach to SIPOC process identification includes the following steps:

1. Start with a simple definition of the in-scope process
2. Identify key steps of the process (expand these at the bottom of the SIPOC diagram)
3. Have the team identify the major inputs and outputs of the process
4. Have the team identify key suppliers of the inputs, and customer for each output

Similar to any other project, a business process optimization project requires the formal identification of a project team with clear structure, roles and responsibilities. Use the SIPOC High Level Process Map to ensure all process stakeholders are represented on the core project team.

Remember, the Initiating and Planning Phase of a business process optimization project starts by formally identifying the process problem, not with the identification of a process solution. Six Sigma tools such as the SIPOC, COPQ, and VOC help the project team identify the potential issues, process scope and essential process representatives, before the organization invests substantial time and money in the initiative.

Combining Six Sigma and Project Management Best Practices in the Execution of a Business Process Optimization (BPO) Project

Measuring and Analyzing Current Process Performance

During the execution phase of a BPO project, the project manager is focusing on executing the process optimization plan. These integral activities can include the development of individual and team competencies through the use of various team building exercises, and reward and recognition systems and locating team members in the same physical area. The project manager is also focusing efforts to ensure the process optimization plan is being carried out through regularly scheduled status meetings to exchange information about the project. During the execution phase, team efforts are focused on the identification of measurements to determine the effectiveness and efficiency of the process. Developing process measures are critical for a process optimization project and must identify and capture data on key performance indicators to determine process effectiveness and efficiency. Process effectiveness measures a customer's quantifiable service or product specifications. Additionally, a process optimization project must track key performance indicators that reflect the internal efficiency of the process. In general, the following steps are completed to measure the performance of a business process:

1. Develop a data collection plan for the process
2. Identify process efficiency data collection sources
3. Identify process effectiveness data collection sources (primarily customers of the service or product)
4. Collect efficiency and effectiveness data to determine process performance baseline measurements

Six Sigma employs Process Diagrams as an effective tool to define and illustrate discreet process steps and their specific metrics for process efficiency. Process diagrams begin as a high level (macro) illustration of the key process steps (Exhibit 3 – Process Diagram) and in its advanced format, depicts supplier and customer relationships. Additional points of process details are captured in the mini level and further process break out in the micro diagram. Additionally, the added benefits of the process diagram include its use to promote an understanding of the key business process across the supporting functional areas, use as a tool for training purposes, and may be used later as the basis for identifying process improvements. A high level process map may include the overall process cycle time and days to completion metrics for each process step. Performance indicators such as cycle/throughput time, resource utilization, rework/reprocess, defect rates, waste, work in process (WIP), queues, and customer satisfaction are also included.

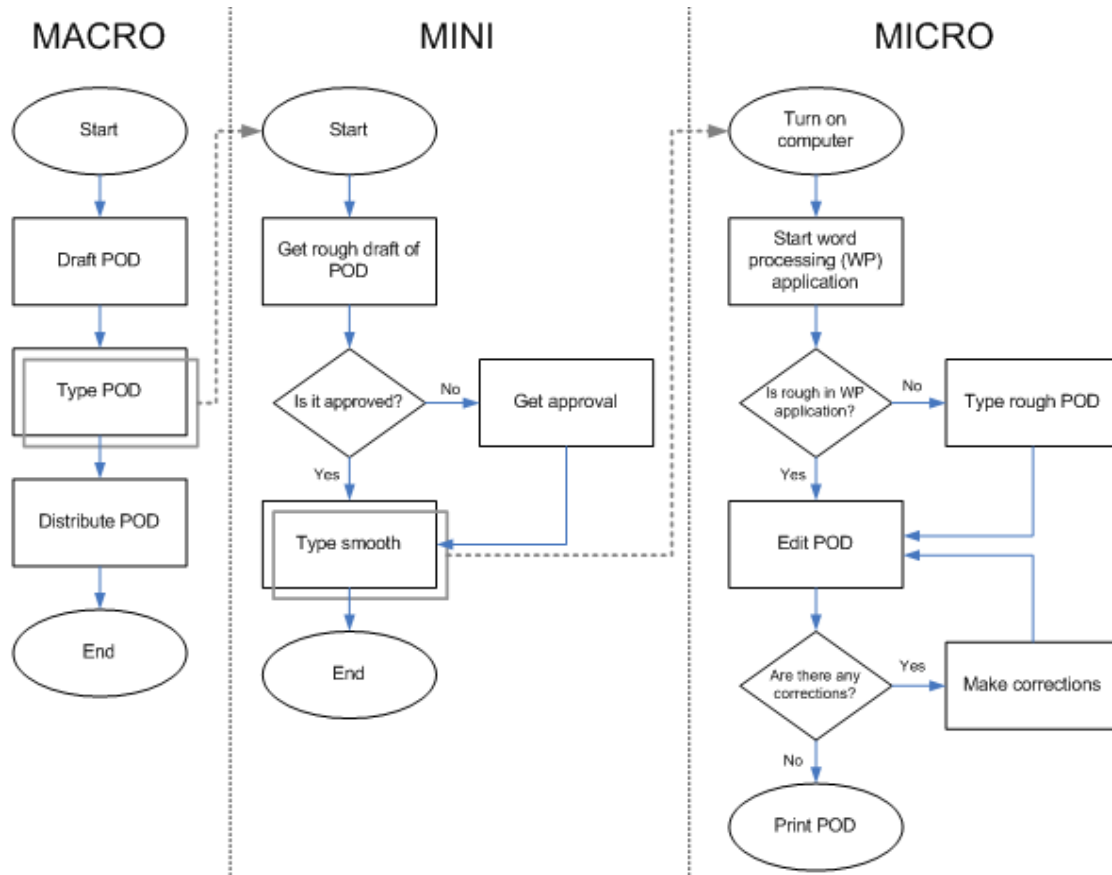


Exhibit 3 – Process Diagram

The next step in a process optimization project aims to identify those critical factors that enable or hinder process execution success. Six Sigma defines this as the “Analyze” phase whereby the project team seeks to understand the process and its root causes for process inhibitors. One tool that assists the project team in analyzing the current process is the use of a SWOT (strengths, weaknesses, opportunities, threats) analysis. During this exercise, the team, using the mapped current process, identifies process strengths, and weaknesses. Process strengths are defined as those attributes of the process that enable the process to meet its determined objective. Process weaknesses are defined as those attributes that have a negative effect or hinder successful execution. While strengths and weaknesses focus on internal factors that impact a process; opportunities and threats identify external factors that have an impact upon the process. The figure on the following page provides examples of process strengths, weaknesses, opportunities, and threats.

		Positive	Negative
Internal Factors	Strengths	<ul style="list-style-type: none"> • Technological skills • Leading brands • Distribution channels • Customer loyalty/relationship • Production quality • Scale • Management 	Weaknesses <ul style="list-style-type: none"> • Absence of important skills • Weak brands • Poor access to distribution • Low customer retention • Unreliable product/service • Sub-scale • Management
	External Factors	Opportunities <ul style="list-style-type: none"> • Changing customer tastes • Liberalisation of geographic markets • Technological advances • Changes in government politics • Lower personal taxes • Change in population age structure • New distribution channels 	Threats <ul style="list-style-type: none"> • Changing customer tastes • Closing of geographic markets • Technological advances • Changes in government politics • Tax increases • Change in population age structure • New distribution channels

Another Six Sigma tool is a “Pareto” analysis to help identify the most common categories or reasons for process failure. Pareto charts are simply frequency plots where most frequent results are placed in order from left to right. The chart also plots as a line, the cumulative frequency from the left of the chart. Be certain to have an ample sample size of data in each Pareto chart as this will ensure that the chart results are meaningful. On the following page (Exhibit 4) is an example of a Pareto chart used to analyze the root causes of missed milestones in a retail organization’s Product Category Line Review Process.

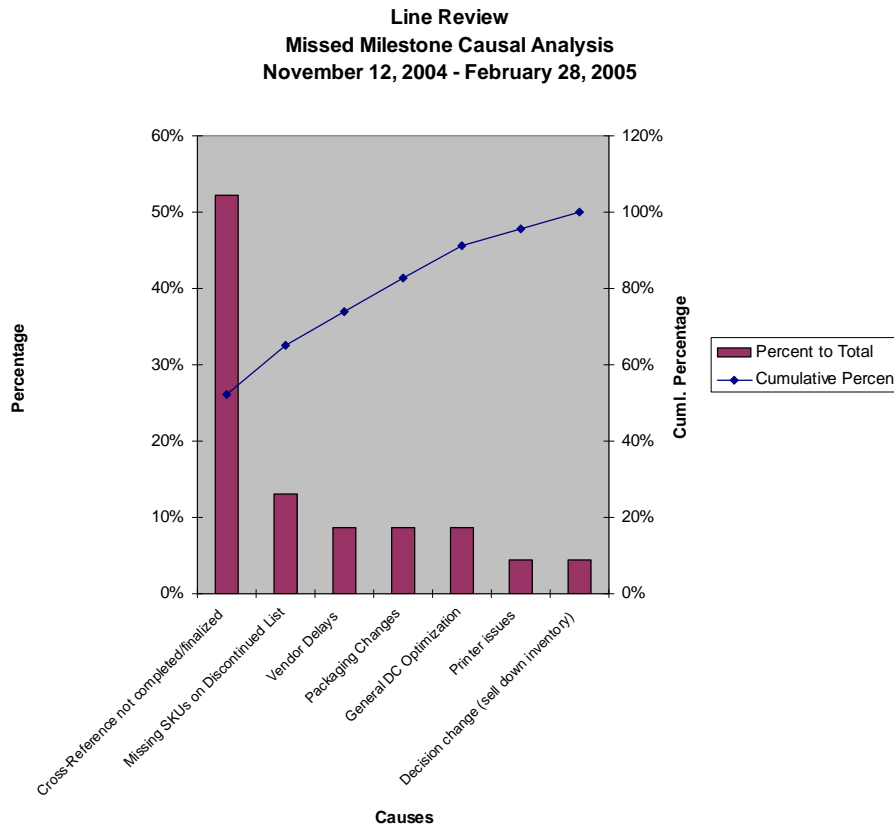


Exhibit 4 – Pareto Chart Example

Once the project team has identified the most frequent reasons for process delay or failure, the team may choose to utilize the Five Whys to investigate the reasons for a specific failure or delay to find a problem's root cause. The Five Whys is a simple yet effective technique to investigate the results from the Pareto Analysis in more detail. Using the Pareto Analysis, the project team will question why the cross-reference spreadsheet was not completed or finalized on time. Below is an example of the Five Whys using the cross reference example:

Problem: the Cross Reference Spreadsheet was not completed or finalized on time.

- *Why #1 – the Category Manager used the wrong version and had to rework the spreadsheet.*
- *Why #2 – the Category Manager did not allocate the required two week time frame to prepare the final version.*
- *Why #3 – the Divisional Vice President did not communicate the final deadline date to the Category Manager.*
- *Why #4 – the Product manufacturer had provided the incorrect SKU number for input into the spreadsheet.*
- *Why #5 – the Product manufacturer was not provided a deadline date for SKU submittal.*

The key to a process optimization project lies in the ability of the project team to identify process inefficiencies and causes of failure. Process Mapping, SWOT Analysis, Pareto Analysis, and the Five Whys are examples of tools that the BPO project team can utilize to identify and understand the root cause of process inefficiencies or failure. Another effective tool for

organizing the team's thoughts include the Fishbone (Ishikawa) diagram that identifies root causes and their effect on the remainder of the process. Utilization of these tools by the project team greatly increases the chances of identifying effective solutions to ensure process execution success.

Improving Process Performance

After the project team identifies process inefficiencies and causes of failure, the focus of the team effort is on the identification, development and implementation planning of the most viable solutions. If the process is to be re-engineered, the project team may choose to map a desired-state process map. Mapping the desired-state process is a very useful tool that allows the team to visualize the optimized process and ensure all process weaknesses and threats are amply mitigated while sustaining process strengths, and implementing process opportunities. The project team may optimize the process in several different areas including the identification of systemic enhancements such as software applications, reports, or email reminders that enable improved process communications or a direct impact on process performance. Or, a simple reworking of process roles and responsibilities may eliminate the need for rework or process redundancies. The BPO project team may elect to capture these systemic, procedural, or responsibility changes directly on the desired-state process map.

Combining Six Sigma and Project Management Best Practices in the Control of a BPO Project

Controlling Key Business Process

Following the development and testing of systemic, procedural, or responsibility enhancements, the BPO project team's efforts should focus on ensuring the solutions are implemented and measured for their effectiveness. The team must identify measures to be tracked after the desired-state process is deployed. This activity includes the identification of who is responsible for collecting and analyzing the process data and reporting process efficiencies and effectiveness to the entire organization in the form of process dashboards or status reports. Six Sigma projects typically employ statistical process control charts that track the stability and variation of a particular process. A typical Statistical Process Control chart tracks the performance of a process over time and shows control limits in which the results will lie between if the process is "in-control." Use of any Statistical Process Control chart requires regular updating and review to ensure its relevance. This ensures that process performance doesn't decline again.

Process change control is another key that ensures continued alignment with an organization's strategic goals; processes are enabled by technological change, not hindered, and that the appropriate organizational structure is in place to provide resources to support the business process. As documented in the Six Sigma Black Belt Guide (2001), a classic model for managing the change process has three phases: unfreezing, movement, and refreezing. Once a process change is identified and ready for deployment, the "unfreezing" of existing behavior patterns must be addressed. Typically, most work groups are resistant to change, however this must be addressed. People or practices must then be directed ("movement") to the process change either by training or technology. Once process resources have acquired the necessary skills and technology is in place, the process is then "refrozen" to ensure the department is aligned for organizational effectiveness. One effective technique used to facilitate the transition from existing to new processes is the use of a formal White Paper Fair, where all functional areas impacted by the process changes have an opportunity to visualize the process enhancements.

Summary

Organizations are able to achieve sustainable and effective process improvement by combining project management best practices with certain Six Sigma methodologies. The ability to combine these proven methodologies provides the structure and discipline required to identify process improvement opportunities, develop sustainable solutions, and lead the organization through the strategic change process. Use of these integrated techniques allows business processes to be efficient, agile, and meet the organization's customer demands. In today's challenging global economy, it is essential for organizations to combine the disciplines of project management, Six Sigma, and business process optimization to realize process gains that ensure "faster, better, cheaper" for their products or services, while maintaining a high level of quality in the marketplace.

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