5 Advanced Tools for Quality and Process Approach - Part 2

Learning objectives

- Understand the relevance and importance of business process management.
- Describe the evolution and scope of business process management.
- Explain how business process management can be designed.
- Expand understanding on the portfolio of tools for process management.
- Explore detailed concepts, elements and aspects of QFD, SIPOC and RACI.
- Understand the Business Process Approach.

Keywords

Business Process Management, Quality tools, QFD, SIPOC, RACI,

Required skills
A general knowledge of management on the bachelor's degree level.

Time requirements for the study
You will need approximately 90 minutes of your time to study this chapter.

5.1   An Introduction to Business Process Management (BPM)

An organization is a collection of processes. These processes are the natural business activities performed by organizations and produce value, serve customers and generate income. Managing these processes is the key to the success of the organization.

In the new era of business transformation, an increasing number of enterprises are looking at reorienting themselves into process-centric, customer-focused organizations. This paradigm shift has led to the evolution of business process management (BPM) as a principal management discipline to enable strategic planning of business goals. BPM drives process improvements and innovative applications of technology for greater agility.

Many companies have business processes that are unique to their business models. Since these processes tend to evolve over time as the business reacts to market conditions, the BPM solution chosen must be easily adaptable to the new conditions and requirements and continue to be a perfect fit for the company.

BPM refers to the designing, executing and optimizing of business activities that incorporate people, systems and partners. Business process management suites (BPMS) are integrated tools designed to support BPM efforts. In order to use BPM effectively, organizations must stop focusing exclusively on data and data management, and adopt a process-oriented approach that makes no distinction between the work done by a human and a computer.

Process management involves planning and administering the activities necessary to achieve a high level of performance in key business processes, identifying opportunities for improving quality and operational performance and ultimately customer satisfaction.

Evolution of BPM

There was a considerable focus on TQM in the 1980s. Six Sigma was invented in 1986 and created awareness about "processes." This was followed by business process re-engineering (BPR). BPM has been around for some time and created significant interest and discussion when Smith and Fingar1 published BPM: The Third Wave in 2002. Smith and Fingar describe how the third "wave" is where automation, business process and quality management come together. The third wave of BPM is a synthesis of process representation and collaboration technologies that removes the obstacles blocking the execution of management intentions. BPM can be termed as the convergence of management theory, total quality management, Six Sigma, business engineering and general systems thinking with modern technologies.

The creation of a BPM project or programme and project implementation framework that is appropriate to all organizations and will suit all circumstances is challenging, especially when organizations are not the same. Even if the organizations were the same, the approach to implement BPM would vary enormously from organization to organization and within an organization. There are ten phases in the framework and the phases are:

1. Organizational strategy
2. Process architecture
3. Launch pad
4. Understand
5. Innovate
6. Develop
7. People
8. Implement
9. Realize value
10. Sustainable performance

Scope of BPM

BPM is a management discipline and requires an end-to-end organizational view. Management at the operational level is predominantly about the improvement and control of the processes essential to business to achieve the objectives of the organization. Setting the direction and goals for the business process improvement is a critical step, and one that needs to be addressed by the top management. There are two aspects to the operational management of a business process:

1. Management of the business process as an integral part of "management."
2. Management of business process improvements.

The introduction of technology can be a useful contributor in this. It is far more important to get the processes right before the implementation of technology.

The critical success factors in a BPM project are leadership, BPM-experienced business project manager, linkage to organization strategy, process architecture, people change management, people and empowerment, project initiation and completion, sustainable performance and realizing value.

A business process is any goods or non-goods related cross-functional process of critical importance. Typically, managing such processes requires a process owner and a permanent team. Leading companies identify important business processes throughout the value chain that affect customer satisfaction. These processes typically fall into two categories:

1.   Value creation processes
2.   Support processes

Value creation processes are sometimes called core processes because they are the most important processes "running the business'' and maintaining or achieving a sustainable competitive advantage. They drive the creation of products and services, are critical to customer satisfaction and have a major impact on the strategic goals of an organization. Value creation processes typically include design, production/delivery and other critical business processes.

Value creation processes involve the majority of the organization's employees and produce value for the customers, stockholders and other key stakeholders. They include the processes through which the organization adds greatest value to its products and services. Value creation processes include the business processes most critical to adding value to business itself, resulting in success and growth.

Key value creation processes differ greatly among organizations depending on many factors. These factors include the nature of products and services, how they are produced and delivered, technology requirements, customer and supplier relationships and involvement, out-sourcing, importance of research and development, role of technology acquisition, information and knowledge management, supply chain management, mergers and acquisitions, global expansion and sales and marketing.

In many companies, value creation processes take the form of projects - temporary work structures that start up, produce products or services and then shut down. In order to achieve better process performance and reduce variability, organization's might implement approaches such as the lean enterprise system, Six Sigma methodology, make use of ISO 9000:2000 standards or other process improvement tools.

Support processes are those that are most important to an organization's value creation processes, employees and daily operations. They provide infrastructure for value creation processes, but generally do not add value directly to the product or service. In general, value creation processes are driven by external customer needs while support processes are driven by internal customer needs. Because value creation processes do add value to products and services, they require a higher level of attention than support processes. These might include facilities management, finance and accounting, public r elations, legal services, human resource services, project management and administration processes.

5.2   Quality Function Deployment - QFD

Dr Mizuno, Professor Emeritus of the Tokyo Institute of Technology, is credited with initiating the quality function deployment (QFD) system. QFD can be applied practically to all industries in the manufacturing and service sector. QFD is a planning tool used to fulfill customer expectations.5 It focuses on customer requirements, often referred to as the voice of the customer and is a disciplined approach to product design, engineering and production and provides in-depth evaluation of a product. An organization that correctly implements QFD can improve engineering knowledge, productivity, quality and reduce costs, product development time and engineering changes. It is employed to translate customer expectations, in terms of specific requirements, into directions and actions and in terms of engineering characteristics that can be deployed through product planning, part development, process planning, production planning and service planning.

QFD is a team-based management tool in which customer expectations are used to drive the product development process. The QFD technique consists of a series of interlocking matrices that translate customer needs into product and process characteristics. QFD yields the following benefits:

- It facilitates identification of the causes of customer complaints and makes it easier to take prompt remedial action.
- It is a useful tool for improving product quality.
- It is a useful tool for competitive analysis of product quality.
- It stabilizes quality.
- It cuts down on rejects and rework at the production site.
- It decreases claims substantially.

House of Quality

The house of quality is the primary planning tool used in QFD. The house of quality translates the voice of the customer into design requirements that meet specific values and matches those against the way in which an organization meets those requirements. Many managers and engineers consider the house of quality to be the primary chart in quality planning. The structure of QFD can be thought of as a framework of a house as shown in Figure 5-1. This is the basic structure for the house of quality.

The "house of quality," the basic design tool of the management approach known as quality function deployment (QFD), originated in 1972 at Mitsubishi's Kobe ship-yard site. Toyota and its suppliers then developed it in numerous ways. The house of quality has been used success-fully by Japanese manufacturers of consumer electronics, home appliances, clothing, integrated circuits, synthetic rubber, construction equipment, and agricultural engines. Japanese designers use it for services like swimming schools and retail outlets and even for planning apartment layouts.
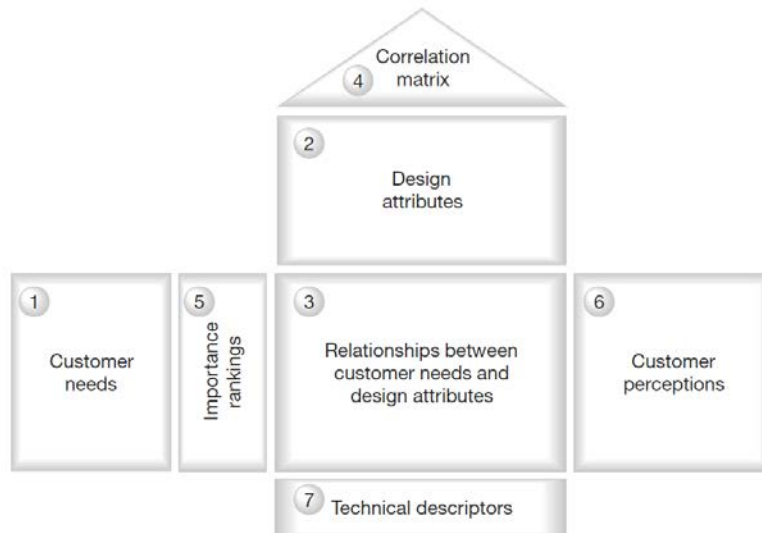
Fig. 5-1. Quality Function Deployment Matrix (QFD) matrix "house of quality"

Building the House of Quality

The following steps can be used to build the house of quality:

Step 1 - List customer requirements: The left exterior wall of the house represents the customer requirements. It deals with the "Whats" that a customer needs or expects in a particular product. The list of customer requirements is divided into a hierarchy of primary, secondary and tertiary customer requirements.

Step 2 - List technical descriptors: The ceiling or second floor of the house contains the technical descriptors. The goal of the house of quality is to design or change the design of a product in such a way that it meets or exceeds the customer expectations. Each engineering characteristic must directly affect a customer's perception and be expressed in measurable terms. These characteristics are an expression of the voice of the customer in technical language. Brainstorming among the engineering staff is a suggested method for determining the technical descriptors.

Step 3 - Compare the relationship between customer requirements and technical descriptors: The next step in building a house of quality is to compare the customer requirements and technical descriptors and determine their respective relationships. The interior walls of the house are the relationships between customer requirements and technical descriptors. Customer expectations (customer requirements) are translated into engineering characteristics (technical descriptors).

Step 4 - Develop an interrelationship between each of the technical descriptors: The roof of the house is the interrelationship between technical descriptors. Trade-offs between similar and/or conflicting technical descriptors is identified.

Step 5 - Implement competitive assessments: The competitive assessments are separated into two categories, customer competitive assessment and technical competitive assessment. The customer competitive assessment is a good way to determine if the

customer requirements have been met and to identify areas to concentrate on in the next design. The customer competitive assessment also contains an appraisal of where an organization stands relative to its major competitors in terms of customer requirements.

The technical competitive assessment is often useful in covering gaps in engineering judgement. When a technical descriptor directly relates to a customer requirement, a comparison is made between the customer's competitive evaluation and the objective measure ranking. Customer requirements and technical descriptors that are strongly related should also exhibit a strong relationship in their competitive assessment. Both assessments are important, because they give the organization an understanding on where its product stands in relationship to the market.

Step 6 - Develop prioritized customer requirements: The right-side exterior wall of the house of quality represents the prioritized customer requirements corresponding to each customer's competitive assessment in the house of quality.

Step 7 - Develop prioritized technical descriptors: The foundation of the house represents the prioritized technical descriptors. The QFD team identifies technical descriptors that are most needed to fulfill customer requirements and needs improvement. These measures pro-vide specific objectives that guide the subsequent design and provide a means of objectively assessing progress and minimizing subjective opinion.

5.3   SIPOC

A SIPOC diagram is a tool used by a team to identify all relevant elements of a process improvement project before work begins. It helps define a complex project that may not be well scoped.

There are two approaches to understanding the present process: One is descriptive and the other is graphic. A good way to understand the process is to describe it. One benefit of describing the process is that it sometimes leads to the discovery of obvious problems and solutions that can be fixed quickly. A flowchart of the process is particularly helpful in obtaining an understanding of how the process works because it provides a visual picture.

There are four types of flowcharts that are particularly useful:

- Top-down flowchart
- Deployment matrix flowchart
- Process map
- SIPOC diagram

Of the four types, the SIPOC diagram method is the one that is most often used. The SIPOC diagram will assist with improvements and simplification by providing:

- A high-level description of the business process addressed by the project.

- An accurate picture of how work is currently done in order to pin-point the location or source of error as precisely as possible by build-ing a factual understanding of the current process conditions.
- Knowledge that will allow the problem solvers to narrow the range of potential causes to be investigated. The key is to understand how the process presently works. Before the Six Sigma Team (SST) can attempt to improve the process, it must understand how it works now and what it is supposed to do.

The team should ask and answer key questions:

- What does the process do?
- What are the stages of the process?
- What are the starting and finishing points of the process?
- What are the inputs and outputs from the process?
- Who are the suppliers and customers of the process?
- Who uses the product and who pays for it?
- Are there obvious problems with the process?

A SIPOC diagram shows only the essential steps in a process without detail.

Because it focuses on the steps that provide real value, it is particularly useful in helping the team to focus on those steps that must be performed in the final "improved" process. The SIPOC diagram provides a picture of the process that the team can use to work on and simplify. It allows people to focus on what should happen instead of what does happen. Usually, most processes have evolved in an ad hoc manner. When problems have occurred, the process has been fixed. The end result is that a simple process has evolved into something complex. A flowchart is a first step to simplify things.

The SIPOC diagram is impressively astute at identifying the part in the process that affects customer satisfaction the most. It illustrates the upstream inputs to the process as well as the outputs and the customers served. This global view assists in identifying exactly where to make base-line measurements.

Two examples illustrate how a SIPOC diagram can keep the focus on the performance of the inputs and outputs so glaring problems can be identified. (See Figures 5-2 and 5-3).

This is useful because it shows who is responsible for each activity, how they fit into the flow of work, and how they relate to others in accomplishing the overall job. To construct a SIPOC diagram, you list the major steps in the process vertically down the center of the page, and you list the suppliers and input groups on the left and the outputs and customers on the right.
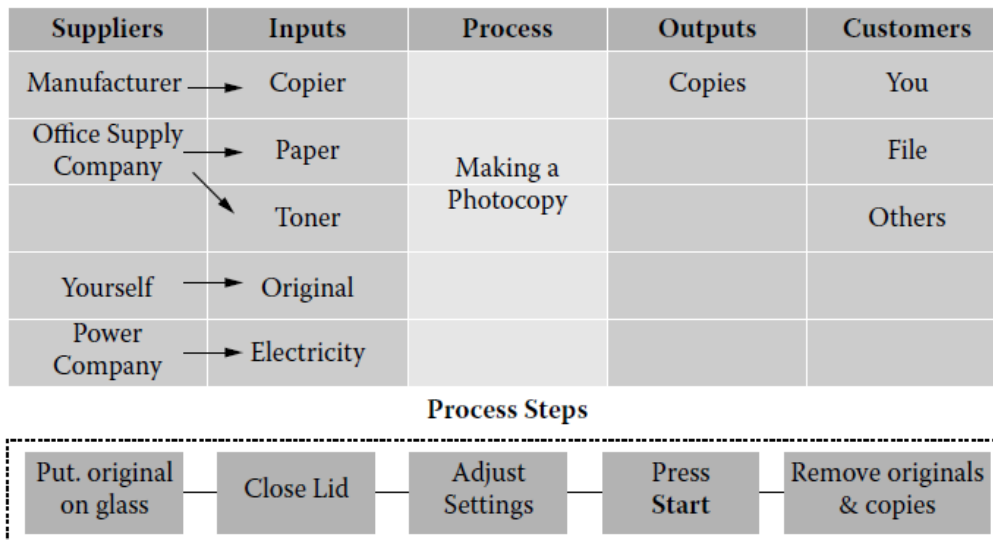
Suppliers	Inputs	Process	Outputs	Customers
Manufacturer →	Copier		Copies	You
Office Supply Company →	Paper	Making a Photocopy		File
	Toner			Others
Yourself →	Original			
Power Company →	Electricity			

Process Steps

Put. original on glass	—	Close Lid	—	Adjust Settings	—	Press Start	—	Remove originals & copies

Fig. 5-2. SIPOC Diagram for credit card processing.

Capturing the as-is picture of an organization's processes is important because it allows a company to be ready for project selection and the intro-duction of Six Sigma tools and Six Sigma certification. If done correctly, defining the current state of a company's processes can help break down strategic focus areas into project ideas. In early Six Sigma deployments, often project scopes are too large, causing excessive project cycle times and loss of internal organizational support. The goal should be ensuring that high-value, well-scoped projects are identified and linked to the company's strategic objectives. This is the importance of project identification and process mapping: It allows an organization to better understand all the steps, critical inputs and outputs, and product and information flows from supplier to customer. Armed with a detailed and shared visual understanding of how work actually occurs, the organization can more easily identify project ideas for improvement.

Once projects are identified, a discussion with key stakeholders can take place to validate initial findings and prioritize projects. This healthy discussion allows individuals to come together and objectively discuss ongoing activities and gaps. Not only will many Lean Six Sigma projects be identified, but other projects that the organization could address will come to light. For the Six Sigma project ideas selected, team charters can be drafted that provide the business case for each project and serve as the guiding framework for improvement efforts. It also is at this point that baseline metrics are established, allowing one to track project and process improvement performance, but it all starts with mapping the current state.

Basically the SIPOC diagram used is a combination of matrix, flow-chart, and summarization and includes:

- **Suppliers**: Significant internal/external suppliers to the process.
- **Inputs**: Significant inputs to the process, like material, forms, information, etc.
- **Process**: One block representing the entire process.

- **Outputs**: Significant outputs to internal/external customers.
- **Customers**: Significant internal/external customers to the process.

A SIPOC diagram helps to identify the process outputs and the customers of those outputs so that the voice of the customer can be captured. When mapping the detailed level of the SIPOC diagram, one can choose the swim lane or other related method. A swim lane flowchart is a type of process flow diagram that depicts where and who is working on a particular activity or subset of the process.

5.3 RACI

A RACI matrix is a great tool to help clearly define the roles and responsibilities of each team member. As a project manager, it can help you in delegation and accountability. It is important that you set the expectations of people involved in your project from the outset. The RACI model is a straightforward tool used for identifying roles and responsibilities and avoiding confusion over those roles and responsibilities during a project. The acronym RACI stands for:

Responsible: The person who does the work to achieve the task. They have responsibility for getting the work done or decision made. As a rule this is one person; examples might be a business analyst, application developer or technical architect.

Accountable: The person who is accountable for the correct and thorough completion of the task. This must be one person and is often the project executive or project sponsor. This is the role that responsible is accountable to and approves their work.

Consulted: The people who provide information for the project and with whom there is two-way communication. This is usually several people, often subject matter experts.

Informed: The people kept informed of progress and with whom there is one-way communication. These are people that are affected by the outcome of the tasks, so need to be kept up-to-date.

Without clearly defined roles and responsibilities, it is easy for projects to run into trouble. When people know what management expects of them, it is easier for them to complete their work on time, within budget and to the right level of quality.

A RACI matrix supports the model and is used to discuss, agree and communicate roles and responsibilities.

Fig. 5-3. RACI Matrix Template

Summary

Business process management refers to the designing, executing, and optimizing of business activities that incorporate people, systems, and partners. Leading companies identify important business processes throughout the value chain that affect customer satisfaction. These processes typically fall into two categories—value creation processes and sup-port processes.

A business process is any goods or non-goods related cross-functional process of critical importance. Typically, managing such processes requires a process owner and a permanent team. A process owner might be an individual, a team, a department or some cross-functional group responsible for the overall performance of a process. These responsibilities include effectiveness, efficiency, control and adaptability.

Value creation processes are important to "running the business'' and maintaining or achieving a sustainable competitive advantage. Support processes are those that are most important to an organization's value creation processes, employees and daily operations.

Design processes involve all activities that are performed to incorporate customer requirements, new technology, and past learning into the functional specifications of a product and thus define its fitness for use. The typical product development process consists of six phases idea generation, preliminary concept development, product/process development, full-scale production, market introduction and market evaluation.

Process mapping is a process that establishes the overall status of a business enterprise and defines what it does, the people responsible for running the business and the standard required to ensure the success of its operations. The tools used for process mapping are basic flowchart, swim lane diagram, value stream map, SIPOC diagram and the spaghetti diagram.

There are ten phases in the BPM implementation framework organization strategies, process architecture, launch pad, understand, innovate, develop, people, implement,

realize value and sustainable performance. Process management consists of three key activities -design, control and improvement. Companies that are recognized world leaders in quality and customer satisfaction share some common practices.

BPM is about the management of process improvement sustainability within the organization. It is about the establishment of a business architecture, process governance, organizational change management capability, sustainable process performance and increasing BPM maturity, among others.

A SIPOC diagram helps to identify the process outputs and the customers of those outputs so that the voice of the customer can be captured. When mapping the detailed level of the SIPOC diagram, one can choose the swim lane or other related method. A swim lane flowchart is a type of process flow diagram that depicts where and who is working on a particular activity or subset of the process.

The RACI model is a straightforward tool used for identifying roles and responsibilities and avoiding confusion over those roles and responsibilities during a project.

Review questions

1. Define business process management.
2. Explain the value creation and support processes with an example.
3. Describe QFD.
4. Explain the concept of the house of quality.
5. Discuss the seven steps used in building the house of quality.
6. Describe the 5 parts of the SIPOC.
7. List at least 3 benefits of implementing a RACI matrix in an organizational unit.
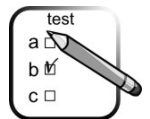
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