

Chapter 4

Business Process Management (BPM): The Information Loop

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Now that we live in an age in which cocreation is taken seriously, entrepreneurs must focus and anticipate, or they will go under. Organizations, within or outside their own chain, work together for products and services, subsequently find an appropriate business model, and offer their products on the market. This does not take a year of preparation. This may be done in months or, if possible, even weeks.

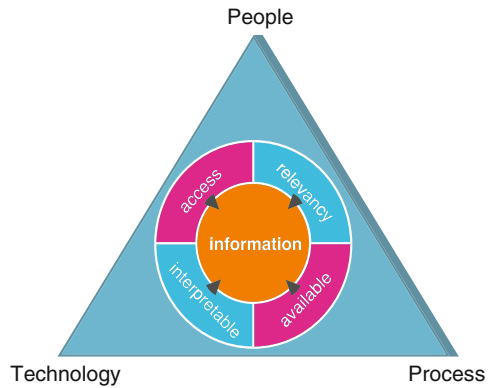
The development and structuring of business activities by setting up or changing processes must be simple, fast, and effective in order to fit in with this kind of cooperation. The sometimes fleeting existence of (co-)partnerships and the essence of doing good business, as a starting point, are the most basic parts of business process management (BPM); what makes us do what we do and for/with whom? Business processes are not only structures that ensure uniformity and effectiveness; they also connect people and departments, systems and techniques, but above all processes are used to cross link information.

BPPM is a field of study that deals with giving direction to and examining the interconnections among an organization's activities in a way that is in line with its goals. For 40years, IT has played an important role in the efficient performance of these activities, in supporting human-related activities, and in directing and controlling these activities. Like business intelligence (BI), enterprise content management (ECM), and enterprise search and retrieval (ESR), BPM is a field where technology, information, and organization are logically connected to each other.

Section 4.1 starts with an introduction and our vision of BPM as a part of enterprise information management (EIM).

Sections 4.2, 4.3, 4.4 and 4.5 tie in with the limitations of BPM from the perspectives of people, process, and technology to get to information as shown in the EIM triangle (Fig. 4.1).

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Fig. 4.1 EIM triangle

4.1 Concepts and Vision

4.1.1 What Is Business Process Management?

In every organization activities take place that are associated with the goals of the organization. Whether this is a factory where a product is made or a service provider committed to fulfilling a certain need. An activity usually consists of a number of steps that need to proceed in a particular order and according to certain agreements. These steps can be arranged in a diagram, a process scheme (flow). When the organization starts arranging its activities based on this scheme, it is called process management. An organization with the processes described has insight into the route along which activities occur, starts thinking about the optimal alignment of the activities (optimization), and tries to work faster, easier, or in a different manner (innovation).

Wikipedia describes BPM as follows:

Business process management (BPM) is a holistic management approach focused on aligning all aspects of an organization with the wants and needs of clients. It promotes business effectiveness and efficiency while striving for innovation, flexibility, and integration with technology. BPM attempts to improve processes continuously. It can therefore be described as a “process optimization process.” It is argued that BPM enables organizations to be more efficient, more effective and more capable of change than a functionally focused, traditional hierarchical management approach.

This shows that nowadays, organizations attach great importance to processes that distinguish them from the competition and that generate higher profits from management. In the past, methods like workflow management, lean management, or Six Sigma were used to map and analyze processes. The focus was mainly on the process itself or on improving/controlling the quality of the results of the process.

As John Jeston and Johan Nelis wrote in their white paper “Management by Process,” “Six Sigma is not a subset of BPM, it is a useful adjunct....” Meanwhile,

the field of BPM has taken some giant leaps in the development of a pure inventory of steps in the process toward a total package of process, organization, technology, and people. As a result, BPM has moved up to change management, which entails thinking about the consequences that decisions will have for people and overcoming the resistance that may accompany any changes.

Within BPM a distinction is often made between:

Primary processes (or production or operational processes), which include all activities where the output contributes to the end result for the customer; primary processes represent the organization's right to exist;

Management processes, which are all activities needed to manage the organization and the primary processes;

Supporting processes, which are all activities needed to facilitate the primary processes.

Nowadays, in BPM the focus is mainly on the coherence between the process and the other important components within an organization such as strategic alignment, governance, methodologies, information technology, people, and culture. This means that the organization is the sum of all processes that take place within the organization. Consequently, BPM can be defined as describing, implementing, and improving processes in relation to the people and technologies that are needed to perform activities.

Note the term *governance* in the preceding list. Governance refers to the procedure or manner of management, ethics, and monitoring of organizations. It is linked to decisions that define expectations, empower, or verify performances. It consists either of a separate process, on the one hand, or a specific part of management or leadership processes, on the other. In organizations, governance is often translated as having key performance indicators (KPIs) for the main processes and for measuring the processes and acting accordingly (Jeston and Nelis 2006).

Fewer and fewer organizations today are focusing on the previously mentioned types of processes; rather, they are turning their attention to the set of processes concerned with the customer, the so-called customer-oriented processes. In this regard, organizations need to keep a close eye on the relationship among the different processes in the process chain (what process is performed and delivered to the next link? what are the responsibilities?), but the following kinds of questions should be addressed: Why does this organization exist? What are its mission and vision? What are its goals and what is its chosen strategy? All this, seen from a customer's perspective, determines whether an organization is performing the right activities and whether those activities meet customer demands.

Ownership and division of responsibilities are crucial for BPM to achieve the ultimate goal of process descriptions – ensuring business effectiveness and efficiency.

BPM makes business processes more transparent and the organization as a whole more flexible (agile). The best result with BPM, the most value-adding result, is produced when the organization's strategy leads directly to decision making on the processes and to an integrated process architecture and a structured approach (Fig. 4.2).

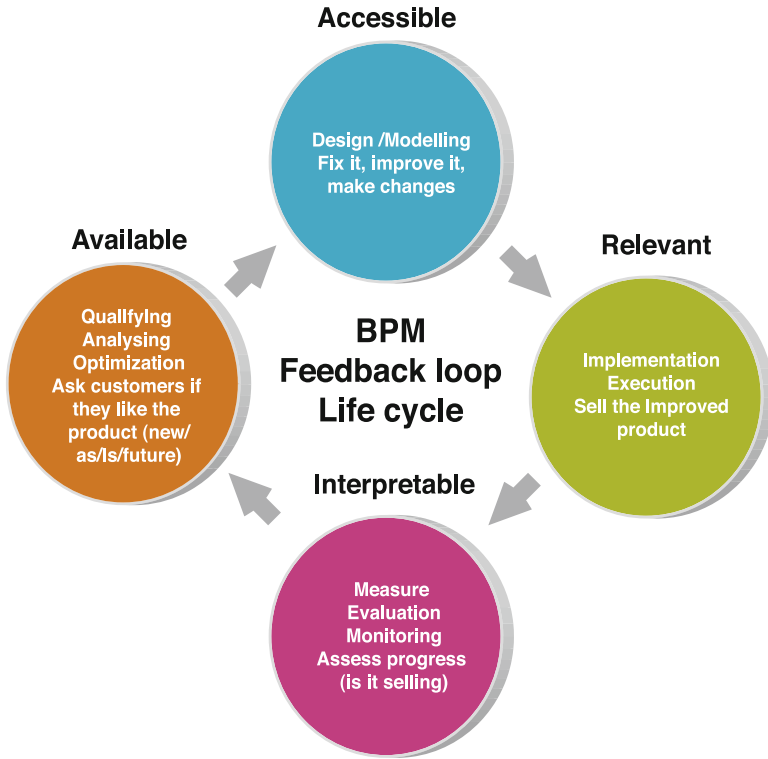


Fig. 4.2 BPM feedback loop and life cycle

The structured approach that over the years has led to optimum results in organizations is based on strictly using a feedback loop in which the cycle of qualifying and analyzing, via design and implementation, leads to measuring and evaluating. The ultimate goal is to use the conclusions from the evaluation to adjust the process and, in so doing, start a new cycle of the loop. The components of the feedback loop form the core of Sects. 4.2–4.5.

4.1.2 *BPM Vision*

BPM plays an important role within the EIM concept. For businesses, the vision of enterprise information means that a given employee always has access to information when it is needed. The availability of information alone does not constitute BPM. The business itself defines the power of BPM, in other words, its ability to make decisions based on the information available. Obviously, the available information and ability to make decisions must be in line with each other.

Drawing up an inventory of processes is important within all components of EIM (BI, ECM, ESR, and BPM) for finding out how EIM can contribute to these pro-

cesses in terms of the integration of the different components. The processes are essentially the links in the information flow between the separate components. The point, for example, in an invoicing system where incoming bills are recorded and then electronically distributed according to an authentication scheme – all this is done on the basis of the steps in a predefined process. The data about the payment (which employee of what department made commitments for what amount of money?) end up in a database so that reports can be created. After a while, this database becomes part of a source system for a data warehouse and may become part of a data mart to be used by management to draw conclusions about the extent to which the finance department is doing its job. Accounts can be linked to, for example, order administration and the underlying documentation of products that are ordered. The possibilities are endless, and an important goal within EIM is to match the integration between data and information (structured and unstructured, formal and informal) with the needs of the organization and employees in their daily work.

Usually, process optimization serves as the motivation for formulating and implementing an information strategy. The current processes within an organization will reveal problem areas regarding information provisioning. This will allow for investigating the impact on the overall processes and the improvements that could be made to optimize information provisioning.

The EIM maturity model offers good guidelines to show what the organization is capable of and what it needs to reach its full potential. Research may offer insight into what is required to bring the organization and the information management to the desired, higher maturity level.

From a people perspective, BPM means that all employees understand given information and are trained to make the right decisions. They enjoy the full support of management, and the organizational culture is based on transparency and the will to improve the business processes in such a way that the improvements are in line with the business goals.

BPM from a process perspective means that the business processes can be optimized and that the decisions that need to be taken to achieve this are supported by figures from the source systems or data warehouse architecture. Where in this process is there room for improvement? Why is this not optimally used? The fact that answers to these questions are still open does not mean that the organization must go back to using stopwatch techniques to minimize lead times; it does mean, however, that certain parts of the chain could work more efficiently if information in the processed were (re)used.

BPM from a technological perspective means that data are stored in several locations. In recent decades, the BPM field has been especially well positioned from this perspective, and this has led to a number of concepts that can be used to supply needed information to achieve the process and people perspective.

As was mentioned previously, in BPM, processes can be in a certain phase (qualify, analyze, design, implement, measure, and evaluate). Based on evaluation, a new analysis is conducted and the cycle starts all over again. The number of times the feedback cycle is looped shows the degree to which the organization is dedicated to optimizing its processes; more loops means that the organization will show more maturity in relation to its processes.

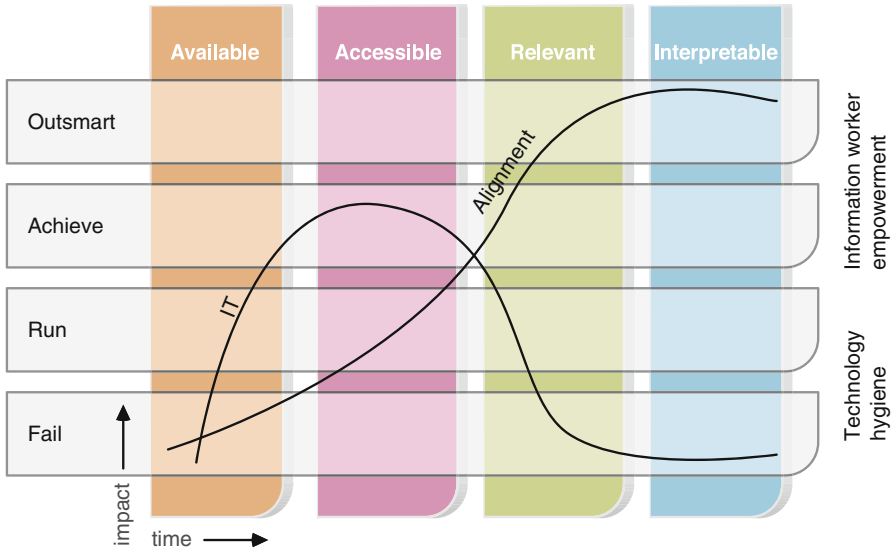


Fig. 4.3 EIM maturity model and constraints

Processes are usually described in terms of steps and in terms of the role/position that is responsible for a given step. Often it becomes clear that there are gaps between steps, that steps are performed twice by different people, that the process is not as clear as it first seemed, that processes never or constantly change, or that the goal of the processes (what are we doing and what do we want to achieve?) is ambiguous. These are all aspects that indicate the maturity level of the processes in an organization and that offer opportunities for process optimization.

This shows that change is a constant factor within BPM. This is not a process of change as in Kotter, for which the necessity should be considered; the process should be supported by the appropriate decision makers and requires a vision. Nevertheless, communication with all workers in the organization, and especially management, regarding the processes is the key to acceptance and success with implementation in BPM.

Communication provides greater understanding to the employees who work with the (sub)processes. Often, they are the ones who know the details about what is not going well and what elements of the processes could be improved to optimize the business and, in doing so, ensure the continuity of the organization (Fig. 4.3).

Four levels are used within the maturity model. These are fail, run, achieve, and outsmart.

The lowest level of maturity is fail, which simply means there is insufficient information available to certain processes to run smoothly. The next higher level means that the information for a specific area is just enough to execute the associated process satisfactorily. This level is called run.

The next level of maturity is called achieve. The focus of this level is efficiency. This level is about executing the primary and important processes as quickly and accurately as possible, making optimum use of available information.

The highest maturity level is outsmart. This level is about using the same information as your competitors and, perhaps, making smarter decisions. Organizations that have their primary processes at the outsmart level establish a strong competitive position.

When thinking about the curve in the maturity model to represent BPM (which is not drawn in the model now), it immediately becomes clear that processes (and therefore BPM) from the origin of the graph (limited time and impact; bottem left corner of the graph) has the same curve as IT and then develop in alignment with the needs of the information worker. At first, the focus is on collecting and mapping the processes in which IT is dominant but when it comes to interpreting and changing the processes, people predominate.

With this in mind, it may also be clear that the path to the outsmart level is not a straight line or achieved in one iteration. It is more like a spiral staircase, very slowly winding its way up. It is even possible that the gradation is so small that one needs to take a few steps back to make adjustments so that a new optimum may be found.

Maturity can be determined based on various aspects, but for both EIM and BPM information management and information value are important. Therefore, we will limit ourselves to discussing only the aspects information management and information value.

With this principle in mind, the stages of the maturity model within BPM are characterized as follows:

| | Information management | Information value |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fail | Processes are (still) unclear; there is no program or project that focuses on improving the strategic processes. Processes are not documented and work instruction may not be up-to-date. There is no overlap between processes, which drives up costs and makes it harder to adjust processes | There are no process owners and nobody has a mandate to make the necessary decisions The transition of process steps between departments has not been regulated, and the information transfer is insufficient. Business logic and rules are not established. Compiling and filing of reports is effectively and efficiently regulated |
| Run | Processes have not been standardized but have an ad hoc character; however, they provide sufficient results. There is still much overlap between processes, and now and then small adjustments are made to a process Descriptions are made though still without a connection with other processes and some work instructions are communicated | Basic coordination of certain processes is initiated by the coordinators, though still without a mandate to implement decisions. Reports slowly start to get standardized. A policy is set for saving and destroying reports |

(continued)

| | Information management | Information value |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Achieve | <p>The organization has a clear focus on important processes, which are unambiguous and have a clear goal. Projects aim for a complete overview of the existing processes so that the impact of adjustments can be determined more easily and the information supply supports fairly standardized processes</p> <p>Processes are described and communicated so everybody knows the expectations and goals of the work</p> | <p>(Sub-)processes are merged and process owners are embedded in the organization so that processes can be optimized and the decision making on these matters can proceed efficiently</p> <p>Business logic and rules are defined and serve as a basis for the standardization of processes</p> <p>Reports can be flexibly adapted to changes and stored under archival arrangements</p> |
| Outsmart | <p>The organization is constantly working to improve processes to enhance customer service. Processes and the organizational architecture are viewed in an integrated manner, and improvements are made continuously by means of an agreed-upon progra/set of guidelines. The entire value chain is described in a process-oriented way. This allows for an integrated information supply that can be easily adjusted. All processes are analyzed with a view to reusing them. This leads to processes that are strongly integrated, easy to support, and easily maintained</p> <p>Process owners are actively involved in optimizing processes and improving the information supply</p> | <p>Information flow within the processes runs smoothly across departmental boundaries using workflow systems to further guide the process. Lifecycle management as a discipline is fully supported</p> <p>Business logic is defined in terms of supporting IT, which allows workflow to be used and adjusted more easily</p> <p>A robust review process is in place for compliance with policy. Reports are managed and produced effectively and efficiently and can be easily adapted to changing demands</p> |

4.1.3 Under What Circumstances Is BPM Required?

The righteous BPMer will say “BPM is always required” and he or she may have a point. There are situations, though, where it pays off to look into processes and see whether there are indications that the processes are not optimally adjusted to the goals they should be serving at that moment.

When managers are suddenly seen walking around with all kinds of spreadsheets or having people build small database solutions, this could be an indication of more or different needs within the organization to map out or control processes. Another indication might be that the number of overtime hours or the backlog is not decreasing. A sign that something is amiss could be that the same work is being done in several places within the organization or that work must be redone because something went wrong the first time. Such moments in an organization provide opportunities for improvement from BPM.

In addition to this, there may be a need, from management's perspective, to look into the processes or to adapt them. Often a merger or takeover has occurred (how do we interweave the processes of the two partners so that we benefit from the collaboration?) or a reorganization, change in strategy, or new laws and regulations that the organization must comply with.

Also, it may happen that the quality of the information from management provides insufficient possibilities to make decisions about the processes. This is often described as a lack of reliable management information or poor(er) performance of the systems. Naturally, management wants to know the cause of this, and therefore processes and reports on the processes will be examined.

From an employee perspective the processes should be described clearly in manuals (or digital variants) with descriptions and work instructions to ensure that, in case of high personnel turnover or a growing staff, new employees quickly become operational and structured training can take place.

Organizations benefit from well-oiled and flexible processes. They can quickly identify customer dissatisfaction with products or services and quickly make adjustments to their processes. Customers often appreciate when an organization acknowledges its mistakes and also demand that defective products be recalled, but then the problem must be corrected quickly and never occur again. The organization must be able to respond adequately, often with a change in process as the practical outcome.

4.1.4 Lifecycle Versus Workflow

In practice, workflow management is often mistaken for lifecycle management (see also Chap. 5 "Event Content Management"). A workflow that determines who can do what at a certain moment after all previous steps have been taken can be a blessing, for example, in a car factory where it is unthinkable to place the hood before installing the engine. But this can also be a heavy burden for employees. For employees, workflow management means waiting to perform assigned duties and sometimes even having to assign tasks to themselves to perform multiple actions. If a delay occurs in a previous stage of a process, employees cannot independently accelerate this process.

This may also mean that employees themselves create a bottleneck when they go on vacation or get sick. After a while, the workflow is divided among others, but often this does not happen automatically. Needless to say, workflow changes are not always received with applause.

A system with a built-in lifecycle management is much simpler as far as prescribed order and rules are concerned. The possibility of doing something with a product (often this is integrated in an ECM system, and then comes documentation) depends on the phase that the document is in. In the creation phase, for example, one can create a document, but afterward it can only be read, not edited (formal document); then, in the archive phase, the document is only available to members of management upon request.

4.1.5 Processes and Related Concepts

After the Industrial Revolution it gradually became clear that an organizational structure that was based on predefined processes offered a significant competitive advantage. The way these processes should be defined has been the subject of study for a long time. Large companies in particular started to map the processes at their own discretion and in doing so created interesting methods that have inspired many generations of BPMers to implement great optimization measures. Some terms and their relation to BPM are discussed below.

4.1.6 Business Process Reengineering or Redesign

Business process reengineering (BPR) is a management technique and methodology whereby an organization fundamentally and radically restructures its business processes in order to bring about great improvements in the organization. At first, BPR was a method in which all business processes came under the microscope to restructure the entire organization. BPR does not only influence the organizational structure; it also relates to the restructuring and changes in management style and organizational culture.

The main principles of BPR are as follows:

The organization is a collection of processes that can be restructured in a systematic manner.

The nature of change is revolutionary and consists of a transition from functional-oriented business units to multidisciplinary teams. The bureaucratic culture throughout the organization should be changed and customer satisfaction should be the starting point in every process.

Change starts with higher management. Upper-level managers should set an example for the organization. Change does not occur at once; it is a continuous process of adjusting.

Michael Hammer, founding father of this method, came to the conclusion that automating business processes alone would hardly have any effect on their efficiency. In his findings and examples from Ford Motor Company, he indicates that a different approach is required for the effective deployment of IT (Hammer 1990).

Hammer believed that automation combined with restructuring of business processes leads to much greater efficiency and effectiveness than automation alone. Hammer recognized that IT could make radical improvements provided that the traditional ways of thinking about how organizations should operate were abandoned.

Although over the years there has been much criticism of the methodology of BPR, it has led to more sophisticated models that are able to analyze business processes and make them more efficient and effective. Examples are Total Quality Management (TQM), BPM, and Six Sigma.

4.1.7 Total Quality Management

TQM is a management stream with continuous improvements being made to company performance and a focus on meeting client demands and fulfilling the business strategy. Obviously, processes play an important part in this, but this stream sees process as part of a greater whole that leads to a (more) efficient organization.

Company performance metrics include leadership, quality management of suppliers, defining vision and planning, evaluation, process management and improvement, product design, improvement of the quality system, employee involvement, recognition and reward, education and training, and a customer-oriented approach.

The central idea is that it is more efficient to perform all activities right the first time. This saves the organization time on corrections, failed products, and service (such as warranty repairs). Eventually, this will save the organization money. It is applicable both within production companies and service organizations.

Some TQM streams use quality circles, for example Deming's TQM. Unlike the radical BPR, TQM provides incremental changes— so not a revolution but evolution.

4.1.8 Workflow Management

Workflow is a business management concept that stands for a sequence of interrelated steps. It is the visualization of a series of edits that could be the work of one person, a group of people, a staff organization, or one or more simple or complex mechanisms. Workflow may be seen as an abstraction or real work. In control technology applications, workflow may single out a certain aspect of real work under a chosen aspect, thus serving as a virtual representation of actual work. The flow being described may refer to a document or a product that is being transferred from one step to another.

Workflow management is the management of the movements of information, often with the help of automated means. Workflow management ensures that the right information is transferred from one department to another according to the rules of the company in a transparent and efficient manner.

The term is most commonly used in ICT contexts, such as workflow systems or as part of ECM systems. Business processes are stored in workflow systems and ensure that an order, complaint, or other task is processed in the correct order by dividing them into subtasks. The relevant departments handle and approve these tasks in the appropriate order. The status and the course of a task can be checked anytime.

In addition to regulated processing of tasks, additional advantages may be a reduction in costs, improved quality of service, or increased control for the organization over the industrial process. In some cases these improvements can be explained by the fact that the processes in question require less direct involvement of management staff.

4.1.9 Lean Management

Lean manufacturing, or lean management, is a management philosophy that considers all things that do not create value a target for elimination. The method is derived from the Japanese car manufacturer Toyota. This “lean production” would lead to an increase in quality and a decrease in costs, which would lead to an improvement in company performance. Waste may have various causes, one of which is irregularity in processes, for example, variation in measurements. Lean management distinguishes eight kinds of waste: defects, overproduction, transportation, idleness, storage, movement, overactivity, and unused creativity and capacity.

The advantage of this method is that all of a company’s energy and creativity is focused on optimizing all aspects that are perceived as valuable by the customer – such as price, quality, delivery, maintenance, and environmental charges – and whose costs are justified. The introduction and optimization of elements often bring about improvements in safety, industrial hygiene, and ergonomics.

The increased interest for process optimization resulted in a situation where the lean principle is now also applied in nonindustrial environments. For example, lean is also applied in supporting processes such as ICT and sales and marketing, but also in business processes like contact centers.

4.1.10 Six Sigma

The Six Sigma management strategy was originally developed by Motorola. It is applied in many sectors of industry. Six Sigma aims to improve the quality of the results of business processes by detecting and removing the causes of defects or errors so that variation in processes is reduced.

It consists of a collection of quality management methods, including statistical methods. Every Six Sigma within an organization follows a predefined series of steps and has quantifiable financial targets (cost reduction or profit improvement).

The term *six sigma* originates from terminology used in the production industry, specific terms associated with statistical models, or production processes. The maturity of a production process can be described with a “sigma” rating that represents the efficiency in the percentage of error-free products that are produced. A six sigma process is a process in which it is expected that 99.99966 % of the products are error free (3.4 errors per million). Motorola aimed for “six sigma” for all production processes, and this became the nickname for all business and technical activities used to achieve this goal.

4.1.11 Value Chain or Supply Chain Management

The value chain is a business management concept that links the strategically relevant activities of an organization. This concept may be used to describe a

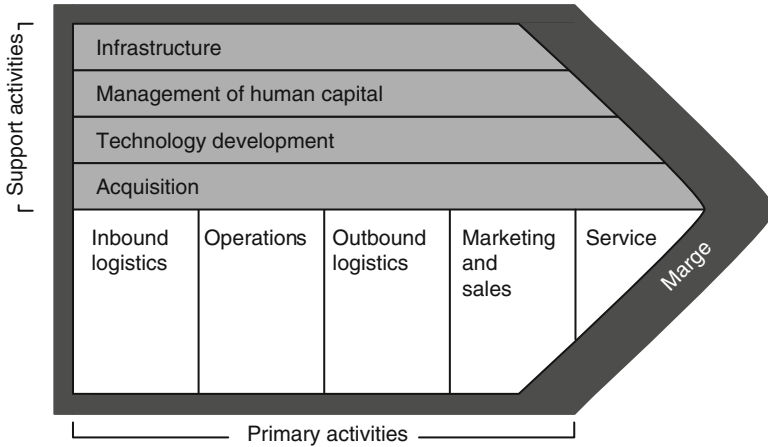


Fig. 4.4 The value chain of Porter

management tool for systematic research of activities or for interactions with third parties. In those parts of BPM discussed earlier, we saw that activities and interaction were usually defined in process flows. The value chain is related to the supply chain and is then mapped out as a process with a fixed order (see figure below). You could therefore consider the value chain a “super flow.”

As stated previously, a value chain is a chain of activities. Products are processed successively through certain activities of the chain and gain value at each activity. The chain of activities as a whole adds more value to the product than the sum of the individual activities. It is important to distinguish the concept of the value chain from the cost structure in the implementation of activities.

This concept was first described in 1985 by Michael Porter in his book *Competitive Advantage: Creating and Sustaining Superior Performance*. Porter also claimed that competitive advantage could not be fully understood as long as a business was seen as a whole. It is essential to systematically examine all activities performed by an organization to determine the sources of competitive advantage. Therefore, all elements as such were put under the microscope and related to other parts of the process (Porter 1985).

A value chain divides a company into its strategically relevant activities to provide insights into the cost behavior and the existing and potential sources of differentiation. A company gains competitive advantage by performing these strategically important activities in a cheaper or better way than its competitors.

To find out exactly where profit can be made, a company will do everything it can to produce products as efficiently and effectively as possible at the least cost and the greatest value. The supporting activities are of minor importance in this model. They add little value and will therefore not receive the same attention as the primary activities (from management but also in terms of finance and number of employees/staff are concerned) (Fig. 4.4).

The value chain shows the primary activities, the supporting activities, and the margins of the organization. Net profit is the difference between total revenue of the organization and the total costs incurred to generate this revenue.

4.2 Availability

4.2.1 How Is Process Information Made Available?

Availability has to do with being able to use data that are generated inside or outside an organization and that can be used within the information management system of the entire organization. To determine which data from the source systems are needed to meet the information demands of (a department of) an organization, we need to know the elements that comprise this information need as well as the business rules that are applied to obtain the desired information.

To meet this information need, it is necessary to determine how any missing information can be added to the processes that are present within the organization or how new processes can be implemented within the existing environments. A common issue in this regard is information about customer satisfaction. All organizations want to know how (potential) customers experience the organizations. There are often no moments of measurement in the business processes to capture this information. New processes need to be added to the workflow to for this to happen (Fig. 4.5).

This section outlines the conditions for bringing process-related information together, which in BPM is often described as qualifying and analyzing. In other words, we are talking about availability from a human point of view.

What actually becomes available about the processes is, among other things, obtained through a workshop, analysis of the Strengths, Weaknesses, Opportunities & Threats of an organization (SWOT analysis), or a description of the organizational context (e.g., force field analysis). All this is done to determine which factors and parties influence the process being described.

Processes can be described in many different ways. In practice, this is usually done using a fixed method and the description is then documented in an application. Different kinds of relationships are defined and described in a responsibilities table that defines who is responsible, who has final responsibility, who is consulted and informed (RACI model), who is the owner of the process, and what activities must be performed in the process and in what order. This is also the time to find out whether



Fig. 4.5 BPM lifecycle, available

the activities are unique or recurring, whether they are optional or mandatory, and whether or not they add value to the chain (e.g., copy, sort, archive, transport).

The processes may be a description of the current or future situation (new or improved). If a process is already running, a description of the future situation is the result of a decision to apply a change. The result is usually a process optimization (e.g., a certain part needs to be improved, speeded up, have fewer steps, be done in a different order) or a totally different approach (e.g., random quality checks instead of checking each product).

By qualifying we mean collecting the needs of the customer to determine if we must, can, or want to fulfill them. This often leads to a requirements analysis with a survey of the needs in order of importance for the customer. With this approach, very specific goals can be set and the chances of a successful implementation increase. Also, it will lead to better alignment with the business goals and architecture of the organization, and an optimal design can be determined based on these conditions.

In a way you could say that the conditions that the design must meet are mainly determined during this stage of the loop. The conditions are usually culturally defined, that is to say, depending on the culture of the organization. Important aspects are the motivation of the goal (why do we want this?), interaction (who does what and in what order?), cultural (what is allowed and what is not?; business rules), and behavior (is there any resistance or is it strongly supported?).

Besides that, the impact of working with fixed processes will play a role. The IT-landscape needs to be mapped out, and any overlap with the selected processes, the extent to which selected processes interface with other processes within the organization, and management's control processes need to be identified. The goal is to supply management with information on (core) processes. The combination of these factors should lead to a Specific, Measurable, Attainable, Relevant, Time-bound (SMART) design.

So, making process information available entails (1) collecting information following the steps in the process, (2) processing the information in schemes, and (3) sharing the results of the measurement at the end of the feedback loop. The "making available" step in terms of qualifying and analyzing is therefore the first step in every description and change of a process (and the conclusion of the final step is to start describing once again), which makes it an actual loop.

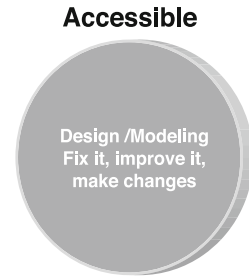
4.3 Accessibility

4.3.1 *How Do We Make Process Information Accessible?*

The second part of the value chain focuses on the design of processes. The accessibility of information plays an important role in this (Fig. 4.6).

Design helps to increase the transparency, effectiveness, and efficiency of processes. A design enables an organization to better align information supply and IT with business processes. This makes it a very helpful communication system.

Fig. 4.6 BPM lifecycle,
accessible



After all the information about the processes has been collected, sorted, and selected to apply to the goals we want to achieve, it is important to think about designing the most optimal process. This phase is called design or modeling. What actually happens is that the organization will look for improvements and make adjustments in the current design or come up with a new design in a schematic representation of the desired reality.

A model can be created of a business process in the form of a scheme. Different model types are used to achieve this. The most familiar model, the DEMO, is described in more detail below. The remaining model types will be described only briefly, and an example of a scheme will be given.

4.3.2 DEMO Model

DEMO is a methodology developed in an academic environment for designing, engineering, and establishing organizations or networks of organizations. The interaction patterns, shown as transactions between parties, form the foundation.

Jan Dietz is the designer of DEMO (Design and Engineering Methodology for Organizations). In this method, the actions of people are central in terms of “communicative actions”: communication is essential for the functioning of the organization; agreements between employees, customers, and suppliers are achieved by communication. The same applies to the acceptance of delivered results – no result without communication (Dietz 1996).

The DEMO methodology is based on the following principles:

The essence of an organization is that it consists of people that act and negotiate with competence and responsibility;

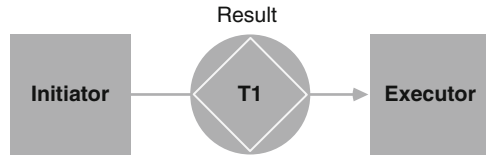
Modeling business processes and information systems is a rational activity that leads to uniformity;

Informatics models should be understandable to all concerned parties;

Information systems should psychologically “fit” their users.

The DEMO approach provides a coherent understanding of communication, information, action, and organization. The scope has shifted from information systems

Fig. 4.7 Example of DEMO transaction diagram



engineering to business systems engineering, which indicates the significance of a clear understanding of both the information systems and the organizations.

When someone (a person) wants to realize that someone else creates the desired result, the communication on this will start with a request. The person receiving the request can respond to it by making a promise in return. After a while, when the desired result has been worked on, it can be announced that the desired result has been achieved. If this result is accepted by the person who made the request, the result is a fact. In DEMO, the pattern in communication between two people that is described here is called a *transaction*, and a chain of transactions is called a *business process*.

Figure 4.7 presents a diagram of the principle of a DEMO transaction between two actors.

The result of a transaction can be described as a fact. Object role modeling (ORM) is used in DEMO for this purpose. Because of the fact that with DEMO a business process can be described as a chain of transactions and the results of these transactions can be described with ORM, a clear connection between a business process and information is created.

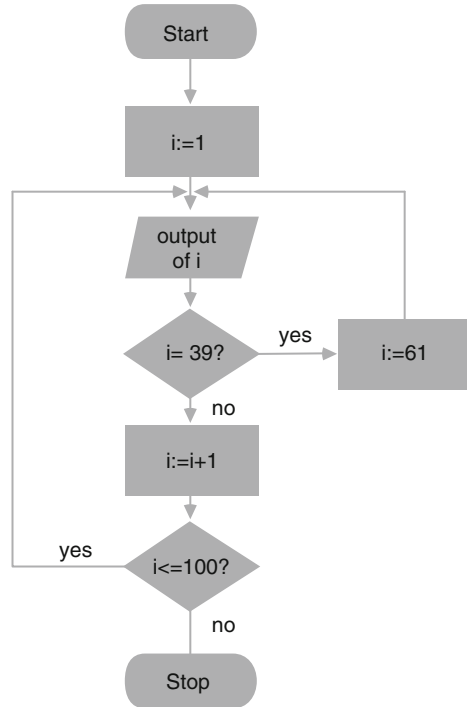
Over the years, this methodology has grown into a basis for many organizations searching for a more pragmatic approach doing business for application in everyday practice. This approach mainly focuses on management and implementation of such programs with a strong focus on business processes. Determining the scope of a process is crucial because in organizations processes are often integrated in such a way that changes quickly affect other processes and systems. An organization rarely starts without a process history, but then a method will be applied in an existing context based on a very wide range of issues and goals. A connection will be established with subjects such as project management, governance, compliancy, (process) architecture, service orientation, business cases, and requirements management.

Increasingly, organizations are coming to acknowledge the added value of thinking in transactions and seeing processes as a management steering tool. The combination of solid theory and practical application unlocks the concept of “management by transaction” for a large group of organizations and businesses.

4.3.3 Data Flow Diagram (DFD)

A data flow diagram (DFD) is a graphic representation of the data flow through an information system. It is a commonly used technique within a structured analysis. Another name for a DFD is a data flow scheme (source: Wikipedia) (Fig. 4.8).

Fig. 4.8 Example of data flow diagram



4.3.4 Flowchart

A flowchart or flow sheet is a diagrammatic representation of a process. It is used mainly to help visualize a process or to find errors in a process (Fig. 4.9).

These diagrams are used, for example, to demonstrate how to assemble a bicycle or piece of furniture or to clarify how to make the right decisions on a tax form. These diagrams may range from simple schemes that are in fact nothing more than a phased plan to production schemes consisting of multiple pages.

4.3.5 Input-Process-Output Model (Also Known as Black Box)

The input-process-output model, also known as the IPO+S model, is a functional model and conceptual scheme of a general system. An IPO chart identifies a program's inputs and outputs and the processing steps required to transform the inputs into the outputs (source: Wikipedia) (Fig. 4.10).

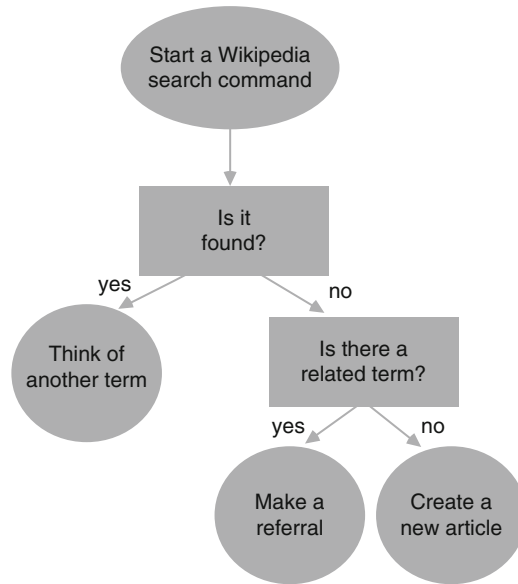


Fig. 4.9 Example of flowchart

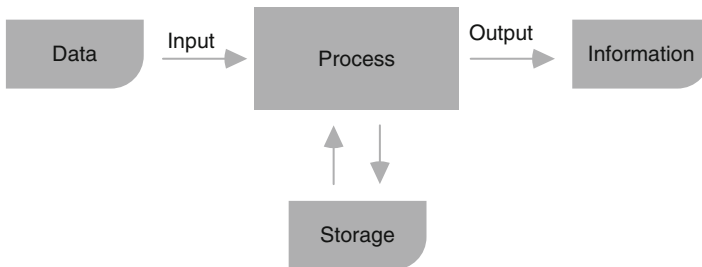


Fig. 4.10 Example of black box model

4.3.6 Supply Chain Model

The supply chain is a network of organizations, people, and activities that exchange information or products. This network is a logistical chain that ensures that products or services reach the user. The network transforms raw material and semiprocessed material into end products. Various subprocesses can be identified in a supply chain (Fig. 4.11).

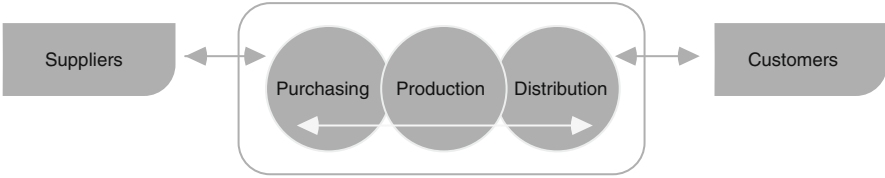


Fig. 4.11 Example of supply chain modeling

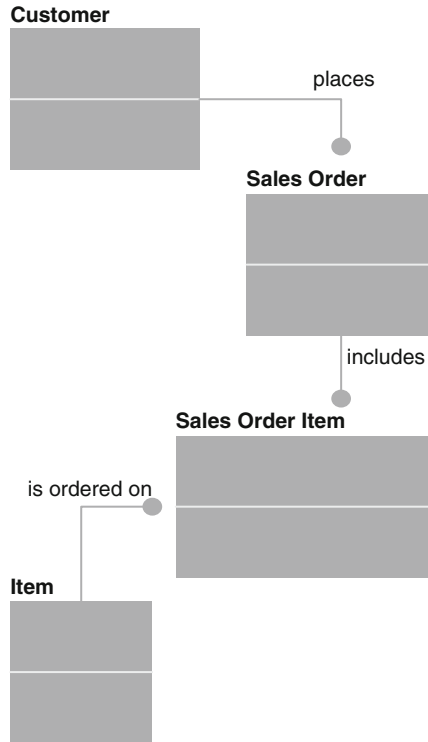


Fig. 4.12 Example of IDEF(0) model

Actors in the chain may account for one or more of these subprocesses. When one actor accounts for several successive processes, this is called vertical integration (source: Wikipedia).

4.3.7 IDEF Model

Integration Definition (IDEF) is a function-modeling methodology for describing manufacturing functions that offers a functional modeling language for the analysis, development, reengineering, and integration of information systems, business processes, or software engineering analysis (source: Wikipedia) (Fig. 4.12).

The examples shown here are very small versions of the actual models, which are often so complex that one could easily cover a wall with the schemes.

A commonly used way to create these kinds of schemes is by organizing interviews or workshops with the people directly involved (as already mentioned in the previous paragraph). This generally is a time-consuming activity with a lot of alignment, in both substance and decision making, of efforts of various people or departments. During any discussions a lot of time is lost in a large number of (operational) details and much time is spent debating all the possible exceptions.

Often it is easy to discuss the optimizations with the people directly involved, but the realization of true innovation/changes in this setting is much harder. In addition, it is difficult to get the responsible business manager involved (the owner, the person who bears final responsibility for the process, if this person has already been defined).

Finally, it is difficult to monitor whether and to what extent the developed processes are and continue to be in line with the business goals and business strategy. In short, from an organizational perspective BPM involves much more than just drawing process flows. And so far we have only discussed BPM in more or less traditional organizations, with solid processes, robust partnerships both internal and external, and employees who have sometimes worked at the same company their entire working careers. You can imagine the impact of frequent changes in the external and internal environments on the processes in real time and the way they are described and adjusted on a day-to-day basis.

4.4 Relevance

4.4.1 *How Do We Make Process Information Relevant?*

Relevance has to do with having information available at the right moment, in the right place, for the right person, in the right form (Fig. 4.13).

After a model has been established and all transactions are mapped out, it is time to actually execute the process. Here we are concerned with the presentation of results and compiling results, custom designed for the end user. Within BPM this is also known as Implementation.



Fig. 4.13 BPM lifecycle, relevance

In the implementation of process information, it is important to check the extent to which it is possible to present the information in such a way that some goal is achieved. The goal is usually to deliver a product or service in the shortest possible time and at the least cost in accordance with user preferences.

Human processing of the data and information is central here. When is information relevant and how is this determined? The human brain filters the available information into useful and useless information.

The purpose of applications that support the activities performed by employees in the form of workflows is therefore to conform with the logic of what is relevant to the organization.

The conditions under which information is processed determines, to a large extent, what is relevant and what is not. Until now, we have looked at BPM from the perspective of a traditional organization with well-defined processes that has as its ultimate goal the optimization of its own business management results.

But besides traditional organizations, there are several other players in a market that play this game under different rules. Think of Internet companies who focus on other areas of the value chain, or the new world of telecommuting where employees no longer need to come to one particular location to do their jobs.

Nowadays, cooperation depends more on opportunity and varies greatly. This has consequences for the processes, the individual steps in the processes, the speed of the processes, and the order in which steps are taken.

The new organization is a network organization. Work is done within the organization but also between organizations. Also, virtual organizations arise where principles such as outsourcing, mobility, flexibility, and teleworking are dominant. The conditions in these new forms of working and working together change so quickly that proper process inventory, much less process optimization, no longer plays a role. The only constant factor in success is that the organization can act quickly and the knowledge that tomorrow will be different than today. The saying “the only constant is change” definitely applies to such organizations.

4.5 Interpretability

4.5.1 How Do We Assess the Value of all the Relevant Process Information?

The final aspect of the human–information–technique interaction that we will discuss is interpretability. Depending on the way information is made available, a tool will be chosen to assess the information (Fig. 4.14).

The result of BPM is first processed by a piece of software and then by a human into information and knowledge (interpretation), which makes it possible to measure a process’s effectiveness and to evaluate whether any improvements can be made to it.

Fig. 4.14 BPM lifecycle, interpretability



We gain our knowledge through measurement. Knowing is having all available information in the form that suits the possibilities of the user’s working methods. Knowing is essential for taking the right decision, initiating an activity, and forming an overview of the situation (monitoring, control).

The benefit of measurement is that it helps to gain insight into business operations. The questions “How long is the complete product cycle?” and “How long is the cycle supposed to be, according to the design?” should be easy to answer. Any discrepancy in the answers must lead to an evaluation and a proposal to adjust the cycle.

The measurement data also offer the opportunity to monitor the KPIs, identify and correct any bottlenecks, or see where work is piling up and whether it should be given to someone else or to another machine.

In short, measurement data offer the opportunity to intervene in a process, in the short or long term, by starting a new feedback loop.

But what if the measurements from the processes contain large amounts of data that are relevant but still do not give a clear picture within the period in which the decision must be taken because of the enormous amount of data? Think about logging and analyzing (big data) data within processes. In recent years, big data have become a hot item. The performance requirements set by the organizations can in many cases no longer be achieved with the “standard” solutions. This is why we are seeing more and more cross linking between large amounts of process data and business intelligence solutions (of which more in Chap. 6, “Business Intelligence”).