**Business process re-engineering**

*Web version of the chapter included in the 5th edition*

Business process re-engineering (BPR) is a technostructural intervention that involves switching attention away from fragmented functional thinking towards cross-functional processes. This chapter:

*  Reviews some of the debates about BPR, such as whether it requires a fundamental rethink and radical change or incremental improvement; organization-wide wholesale transformation or localized piecemeal change; top-down direction or collaborative effort.
*  Presents BPR as a seven-stage process that involves process mapping, identifying which process to re-engineer, understanding the selected process, defining key performance objectives, designing new processes, testing and implementation*.*
*  Argues that BPR can be a highly politicized process that often involves jurisdictional disputes when managers are required to let go of activities or decisions they value.
*  Discusses research findings regarding the success of BPR interventions. Some reports suggest that a high percentage of interventions fail to deliver intended outcomes, but there is evidence that when BPR is successfully implemented it can deliver impressive improvements. Contextual factors that can affect outcomes are discussed.

<Insert UNFig1>

**The effect of organizational structures on performance**

The structure of most organizations has been influenced by the principle of the division of labour, first articulated by Adam Smith (1776/1950) in *The Wealth of Nations*. Smith observed that it was much more efficient to break the process of pin making down into several steps that could be undertaken by specialist workers rather than delegate the whole process to one generalist worker. This principle manifests itself today in organizations that structure activities according to specialist functions rather than value-creating processes. Hammer and Champy (1993) argue that many companies have vertical structures that resemble functional silos built on narrow pieces of a process (Figure 24.1). They illustrate how this affects organizational functioning with reference to the order fulfilment process that starts when a customer places an order and ends when the goods are delivered:

The person checking a customer’s credit is part of the credit department, which is probably a part of the finance organization. Inventory picking is performed by workers in the warehouse, who may report to the vice president of manufacturing. Shipping, on the other hand, is part of logistics. People involved in a process look *inward* towards their department and *upwards* towards their boss, but no one looks *outwards* toward the customer. (Hammer and Champy, 1993, p. 28)

<Insert Figure 24.1>

*Figure* **24.1***Functional structures*

BPR involves switching attention away from fragmented, functional-based thinking towards cross-functional processes that create value for the organization (Figure 24.2). Kaplan and Murdock (1991) argue that focusing attention on and redesigning core processes can make them faster and more flexible, and make organizations more responsive to changes in competitive conditions, consumer demands, product life cycles and technologies.

<Insert Figure 24.2>

*Figure* **24.2***Cross-functional processes*

**The nature of BPR**

Hammer and Champy (1993) define BPR as the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in performance. Some of the competing views around BPR are examined below.

**Fundamental rethink and radical change or incremental improvement?**

Hammer and Champy (1993) argue that BPR is ‘fundamental’ because it involves asking the most basic questions about how an organization operates, questions that challenge many widely held assumptions. Rather than simply asking whether it is possible to improve the way something is done, BPR involves questioning *why* the organization does what it does. For example, those responsible for re-engineering the order fulfilment process, referred to above, might question the need to perform credit checks rather than assuming they are an essential part of the process. It is possible that checking a customer’s credit fails to add any value because the cost of performing a check is greater than any losses that might be incurred from bad debts. Hammer and Champy state that new thinking should not be influenced by embedded assumptions or any existing processes, activities and systems. They advocate a ‘clean sheet’ approach to process redesign.

Davenport and Stoddard (1994) challenge this view. Based on conversations with managers from more than 200 companies and rigorous research on 35 re-engineering initiatives (Javenpaa and Stoddard, 1993), they assert that, in practice, a clean sheet approach is rarely found. Those companies that do adopt this approach tend to make a clear distinction between clean sheet design and clean sheet implementation. They may adopt a clean sheet approach to design because it can provide a vision of a ‘best-of-all-processes’ world towards which the organization can focus its change efforts. Davenport and Stoddard quoted one manager who said: ‘You can design assuming a clean slate, but you must implement assuming the existing state’ (1994, p. 123), and went on to report that designers often start with a ‘dirty slate’, taking into account the opportunities for enabling a new process and the constraints that disable it:

With both design elements in mind, the design team could construct the best possible process given the enablers and the constraints. Whereas this is a less exciting and more difficult design method, designing with a ‘dirty slate’ will normally yield a more implementable process.

**Organization-wide wholesale transformation or localized piecemeal change?**

Hammer and Champy (1993) argue that to be successful, BPR must entail rapid and wholesale transformation rather than piecemeal change. Davenport and Stoddard (1994), however, do not see re-engineering as incompatible with continuous improvement. While they agree with the proposition that re-engineering is a process that can contribute to organizational transformation, they do not agree that it is synonymous with it. They report observingnumerousfirms trying to change too many processes at once and failing in their ambition to achieve radical transformation. However, they also report observing several firms that were successfully creating hybrid configurations, where processes were re-engineered within a functional structure such as the marketing department. McNulty and Ferlie (2002), in their in-depth study of BPR within the Leicester Royal Infirmary (see Case study 3.2), report findings that support Davenport and Stoddard’s position. They found that while the intended strategy was radical and revolutionary, the emergent strategy of re-engineering proved to be evolutionary and convergent in overall approach and impact:

As the re-engineering programme unfolded the initial radical ambition for organizational process redesign was tempered and reshaped in line with functional organisational principles that underpinned the existing pattern of specialties and clinical directorates. Re-engineers learned quickly that they were dependent on the support of managers and clinicians … to effect change at specialty and clinical directorate levels. (McNulty and Ferlie, 2002, p. 116)

**Top-down direction or collaborative effort?**

Those who argue that re-engineering offers a system-wide and radical approach to change also tend to view it as an essentially top-down process. Hammer and Champy (1993, p. 208), for example, believe that people near the front line lack the broad perspective that re-engineering demands:

They may see – probably better than anyone else – the narrow problems from which their departments suffer, but it is difficult for them to see a process as a whole and to recognize its poor overall design as the source of their problems.

They also argue that middle managers lack the required authority to change processes that cross organizational boundaries. There are, however, those who believe that re-engineering can be a more participative process. While Davenport and Stoddard (1994, p. 125) accept that ‘innovative designs for broad processes are unlikely to come from anyone whose head is buried deep in the bowels of the existing process’, they see no reason why all members of design teams must be high in the organizational hierarchy. They argue that those who are at the front line may make a valuable contribution to the design of detailed process activities. They also cite examples of organizational members who have failed to implement newly designed processes because they had had no hand in their creation.

Re-engineering at the Leicester Royal Infirmary started as a top-down programme to identify, redesign and roll out core processes across the hospital. A central re-engineering capability was created using an infrastructure of re-
engineering committees, re-engineering laboratories – physical spaces in which teams or re-engineers could work on the redesign of processes – and internal and external change agents. This initial strategy began to flounder and was eventually replaced by a decentralized approach, which involved responsibility for re-engineering shifting from a dedicated team of re-engineers to managers located within clinical directorates. McNulty and Ferlie (2002) note that it was at this point that the energy and momentum for change increased because individuals felt more able to ‘adopt, adapt and customize’ re-engineering ideas to suit local circumstances and purposes.

**The application of BPR**

BPR typically involves seven steps, which are now discussed in detail.

**Process mapping**

A process is a series of actions that lead to an outcome. Process maps show how work flows through an organization. People tend to be more familiar with organizational units, such as manufacturing, research and development or marketing, than with the processes to which these units contribute. Examples of processes in a business organization are order fulfilment (order to payment – including intermediate steps such as manufacturing), product development (concept to prototype) and sales (prospect to order). Examples of processes in a healthcare organization include patient test (referral to diagnosis) and patient stay (admission to discharge). In most organizations, there are relatively few core processes, but each of these might involve a number of subprocesses. The starting point for any BPR project is to map the processes that contribute to the organization fulfilling its purpose.

**Identifying processes for re-engineering**

Even when the ambition is to use BPR to radically transform the organization in the shortest possible time, it will normally prove impossible to re-engineer all the

organization’s processes simultaneously. Hammer and Champy (1993) suggest three criteria for choosing which processes to re-engineer and the order in which this might be done. They are:

*  *dysfunction:* those processes in the deepest trouble
*  *importance:* processes that have the greatest impact on the organization’s customers
*  *feasibility:* those processes most susceptible to successful redesign.

**Understanding the selected process**

The re-engineering team needs to understand the process, what it does, how well it does it and any critical issues that govern its performance, but it does not, according to the classical school of BPR, need to undertake any detailed analysis. Hammer and Champy (1993) caution against too much analysis because it directs attention inside the process and directs attention away from challenging embedded assumptions. They argue that attention should be focused on seeking a high level of understanding, starting with what the process delivers and how well these outcomes match what customers really want. This then provides the basis for a clean sheet design activity. There are those, however, who see value in starting with a ‘dirty slate’ and looking for opportunities for incremental process improvement (as discussed above).

Improving processes in healthcare settings can involve starting from a clean sheet and radically transforming a process, or it can involve working with an existing process and seeking out opportunities for incremental improvement. Example 24.1 illustrates how those involved in one re-engineering project set about improving their understanding of an existing process before deciding how it could be redesigned.

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| ***Example* 24.1*****Mapping a GP referral for a routine X-ray at a local hospital***A manager responsible for delivering primary healthcare in a community in northwest England decided to explore the possibility of re-engineering some of the processes known to be inefficient and the cause of patient dissatisfaction. One such process involved GPs (general practitioners) referring patients for routine X-rays at a local hospital. Once this process had been identified as the initial target for re-engineering, the next step was to map the process. The manager had been trained in process re-engineering and was familiar with two ways of mapping processes. One was to gather all the stakeholders together for a mapping workshop. The other was for members of a re-engineering team to physically walk through the process and record what happens at each stage. He decided on the second approach but was careful to include in the team representatives of those he knew were involved in the process. Figure 24.1 illustrates their map of the X-ray referral process. It starts when the patient first goes to their GP with symptoms, and ends when the X-ray result is communicated to the patient. <Insert UNFig2>© Image SourceThe map provided the re-engineering team with the information they required to start looking for possible improvements. Some of the things they considered included:*  *the number of steps in the process*
*  *the number of hand-offs:* occasions when the information relating to the patient’s diagnostic test is passed from one person to another
*  *task time:* the time taken for each step
*  *wait time:* the time between each step
*  *dead time when nothing happens:* the dictated report sits on the secretary’s desk for three days before being typed
*  *steps that fail to add any value:* for example, they questioned whether it was time- and cost-effective for the consultant to check the typed report before it was forwarded to the GP
*  *blockages:* steps that slow the rest of the process down.

<Insert Figure 24.3>*Figure* **24.3***GP referral for a routine X-ray at a local hospital* |

Mapping a targeted process is often done in two steps. The first involves producing a high-level process map that provides an overview of how inputs are transformed into outputs, focuses attention on the relative value of the outputs produced by the process – Are they worth the effort required to produce them? Do they really satisfy customers’ needs? – and the value added by particular steps in the process – Can a step be eliminated, integrated with another step, or replaced with an entirely different subprocess? Experience suggests that analysing this kind of high-level map helps to expose embedded assumptions and identify those parts of the overall process that offer the greatest potential for improvement. The second step involves mapping those parts of the process that have potential for improvement in more detail.

**Defining key performance objectives**

Key performance objectives are based on what the re-engineering team and other stakeholders believe the customer requires from the process. They provide a basis for specifying measures that will indicate whether the changes have been successful. Sometimes, benchmarking is used to help define performance objectives, but re- engineers need to be alert to the possibility that benchmarking may limit ambition to what is currently being achieved by ‘the best of the rest’ and inhibit out-of-the-box thinking about what the process could deliver. Baselining, collecting and recording data about existing (pre-re-engineered) performance, can also help with the definition of realistic performance targets and provide a basis for assessing the successes of the re-engineering project.

**Designing new processes**

According to Hammer and Champy (1993, p. 134):

Redesign is the most nakedly creative part of the entire reengineering process. More than any other, it demands imagination, inductive thinking, and a touch of craziness.

They illustrate this with the example of an insurance company that believed it was costing more than it should to settle claims relating to motor accidents. There is no set format for redesigning a process, but it often involves people sharing ideas about how the process might be changed and others ‘piggybacking’ on these ideas to suggest other possibilities (Example 24.2).

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| ***Example* 24.2*The claims settlement process***An employee working for an insurance company noticed that it cost the same per hour to work on a big claim as it did to work on a small claim. This got people thinking about what could be done to reduce the cost of settling claims. A meeting was arranged to explore possibilities. One idea involved introducing a step early in the process that would separate out those claims that would cost a lot to settle (usually those involving a claim for personal injury) and those that would not, and redesigning the process for small claims to cut the time required to settle them. One suggestion for achieving this outcome was to immediately settle any claim for less than a certain amount. Some team members felt that this could encourage fraud and escalate the cost of claims, while others felt that this danger could be managed by only offering immediate settlement to policy holders who had a good no-claims record. A related idea was to let the agent handle claims below a specified amount.This led to somebody else suggesting that the garage should be allowed to deal with the claim, thereby eliminating the need for many steps in the existing process. This proposal was initially dismissed because it was feared that garages might inflate the cost of repairs. However, somebody brought the team back to this idea and suggested that there would be many garages willing to work for modest margins if this enabled them to win more business from the insurance company. It was also recognized that not only could this reduce costs for the insurance company, but it would also lead to greater customer satisfaction. What customers wanted most was their car back on the road as quickly as possible.This first meeting came up with some challenging new ideas, some of which merited further attention and testing. It also involved the application of a number of re-engineering principles, such as organizing work around outcomes, for example reduced cost and increased customer satisfaction, and involving as few people as possible in the process to reduce hand-offs and waiting time. In addition, it involved destroying some embedded assumptions such as garages cannot be trusted. |

**Testing**

An important part of BPR is the testing of ideas to see if they will work in practice. Langley et al. (1996) advocate a plan, do, study, act (PDSA) cycle for process improvement that involves:

*  *planning* a change that can be tested on a small scale or over a limited period – an hour, day or week
*  *doing* or carrying out the test
*  *studying* baseline data and the effect of the test and looking for improvements
*  *acting* to implement the tested change.

This process has many similarities with action research and can involve several iterations before final implementation (Change tool 24.1).

*Change tool* **24.1*****The plan, do, study, act (PDSA) cycle***

The PDSA cycle is a tool for testing ideas by putting changes into effect on a small scale and learning from their impact before full implementation.

The four stages are:

*  *Plan:* plan the change to be tested
*  *Do:* carry out the test (change)
*  *Study:* study data before and after the change and reflect on what was learned
*  *Act:* plan implementation or, if the test was not successful, plan the next PDSA cycle.

<Insert UNFig3>

**Implementation**

If the tests are successful, the redesigned process can be implemented and rolled out, as appropriate, to other parts of the organization. However, great care needs to be exercised if the redesigned process is to be rolled out to powerful individuals or groups who were not part of, and committed to, the re-engineering process. BPR can be highly politicized and often involves jurisdictional disputes when managers are required to let go of activities and decisions they value.

**Results from BPR**

Research findings regarding the results of BPR are mixed. Cummings and Worley (2001) cite a study of 497 companies in the USA and 1,245 companies in Europe, in which 60% of US firms and 75% of European firms had engaged in at least one re-engineering project, but only 15% of them reported positive outcomes. This is quite different to the findings reported by Caron et al. (1994). They found that while only half of 20 BPR projects undertaken by Cigna, a leading provider of insurance and related financial services, were successful first time round, the impact of re- engineering was very positive and the company saved more than $100 million overall. They also reported that some of the most successful projects were those undertaken in self-contained areas.

McNulty and Ferlie (2002) report that attempts to radically transform a large hospital through process re-engineering were highly contested and the outcome of the change was uneven across the organization. Contextual factors had an important effect on outcomes, especially those relating to the extent to which doctors retained control over work practices. They also found that it was easier to secure change in those processes or parts of processes that did not cross boundaries between clinical directorates or between directorates and external agencies. This echoes one of the findings reported by Caron et al. (1994) that some of the most successful projects were those that were undertaken in self-contained areas. Despite the many difficulties encountered when trying to re-engineer the hospital, McNulty and Ferlie observed that the re-engineering methodology did make an important contribution to securing change. For example, in trauma orthopaedic care, there were a number of positive outcomes. The baselining activity produced ‘facts’ about patient activity on which the case for change could be built. Process mapping enabled the re-engineers and other stakeholders, such as doctors, to analyse and understand the care process and develop a vision of change. Finally, piloting allowed some changes to be introduced, often without people realizing that an important change had taken place.

**Summary**

Business process re-engineering involves switching attention away from fragmented functional thinking towards cross-functional processes. This chapter reviewed some of the debates about BPR, such as whether it must involve:

*  a fundamental rethink and radical change or incremental improvement
*  organization-wide wholesale transformation or localized piecemeal change
*  top-down direction or collaborative effort.

**1** *Fundamental rethink and radical change or incremental improvement?*

Hammer and Champy argue that BPR involves a ‘fundamental rethinking’ of business processes. They argue that new thinking should not be influenced by embedded assumptions or any existing processes or activities. They advocate a ‘clean sheet’ approach. Although Davenport and Stoddard recognize the value of ‘clean sheet’ thinking at the design stage, because this provides a ‘best-of-all-processes’ vision, they argue that, more often than not, implementation needs to take account of the existing situation, including enablers and constraints, if the change is to be successful.

**2** *Organization-wide change or localized piecemeal change?*

Hammer and Champy argue that BPR involves a ‘radical redesign’ of business processes. They argue that to be successful, BPR must entail a rapid and wholesale transformation rather than an incremental piecemeal change. On the other hand, Davenport and Stoddard see re-engineering as compatible with continuous improvement. While they agree that re-engineering is a process that can contribute to organizational transformation, they do not agree that it is synonymous with it.

Davenport and Stoddard report observingnumerousfirms trying to change too many processes at once and failing in their ambition to achieve radical transformation. However, they also report observing several firms that were successfully creating hybrid configurations, adding a process dimension to their functional structures.

**3** *Top-down direction or collaborative effort?*

Those who argue that re-engineering offers a system-wide and radical approach to change also tend to view it as an essentially top-down process and argue that BPR initiatives should not be led by people who are involved in the processes. While Davenport and Stoddard (1994, p. 125) accept that ‘innovative designs for broad processes are unlikely to come from anyone whose head is buried deep in the bowels of the existing process’, they see no reason why all members of design teams must be high in the organizational hierarchy. They argue that those who are at the front line may make a valuable contribution to the design of detailed process activities.

BPR involves seven stages:

**1** *Process mapping:* Process maps show how work flows through an organization.

**2** *Identifying which process to reengineer:* Criteria might include dysfunction (Which processes are in deepest trouble?), importance (Which have greatest impact on customers?) and feasibility (Which are most susceptible to successful redesign?).

**3** *Understanding the selected process:* Mapping for understanding can involve identifying the number of steps in the process, number of hand-offs, task time, wait time, dead time when nothing happens, steps that fail to yield any value and blockages.

**4** *Defining key performance objectives:* These need to be based on what the customer requires from the process.

**5** *Designing new processes:* ‘Redesign is the most nakedly creative part of the entire re-engineering process. More than any other, it demands imagination, inductive thinking, and a touch of craziness’ (Hammer and Champy, 1993: 134).

**6** *Testing:* This involves implementing a proposed process improvement on a small scale, or for a limited time to see if it works in practice.

**7** *Implementation:* If the test is successful, the redesigned process can be rolled out across the organization.

Great care may need to be exercised, especially with implementation, because BPR can be highly politicized and often involves jurisdictional disputes when managers are required to let go of activities or decisions they value.

In terms of the typology presented in Figure 16.3, BPR is a technostructural intervention.

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