CHAPTER

9

Organizational Change and Business Process Reengineering

LEARNING OBJECTIVES

After reading this chapter, you should be able to:

- Comprehend why ERP systems are implemented to include business process reengineering (BPR) and "best practices."
- Realize that senior management must be committed to the implementation to assist in overcoming resistance to the change in business processes that meet the company vision and goals.
- Develop an awareness of Organizational Project Management Maturity Model (OPM3) and how it is used to assess an organization's ability to implement an ERP system successfully.
- Introduce business process management (BPM) and discuss its relationship with BPR.

CASE 9-1
Opening Case
FoxMeyer Drugs

Source: "The FoxMeyer Drugs' Bankruptcy: Was it a Failure of ERP?" in *Proceedings of the Association for Information Systems Fifth Americas Conference on Information Systems*, Milwaukee, WI, August 1999. Pages 223–225. Reprinted by permission of Dr. Judy Scott, University of Colorado–Denver.

FoxMeyer Drugs was one of the largest distributors of pharmaceuticals in the world, with a value of more than $5 billion. In 1993, they began an implementation of an ERP software package by SAP, and within four years they were bankrupt. The company officials have taken the stance that their failure was the responsibility of SAP and that the technology failed them; however, in-depth analysis leads one to conclude that the management of FoxMeyer Drugs is to blame because they did not understand the role organizational change was going to play in this implementation.

The failure at FoxMeyer was "not a failure of automation. It was not a failure of commercial software. It was a management failure,"[1] according to Judy B. Scott. FoxMeyer had senior management's support, but it did not have the proper communication channels in place for dealing with the organizational change. As a result, the morale of the workers was hurt and the quality of the products they produced diminished drastically because many felt they would soon be out of their jobs. To make matters worse, many of the workers decided to not wait until the implementation was complete, and there was a mass exodus out of the company to avoid what was seen as inevitable layoffs. If the situation had been communicated more effectively, the workers may not have fled, and the quality would have stayed at the prior standards, such that the business could sustain itself through the implementation; unfortunately, that was not the case.

Things went from bad to worse when the senior management "buy-in" became too powerful. Looking from the outside, it appears as though the belief of senior management was that the technology was the answer to everything. Instead of addressing the changes affecting the organization, and holding off or scaling back some of the technological enhancements, the company redoubled their efforts to implement the software package. They were essentially throwing good money after bad because the failure within the organization had doomed the system to failure regardless of the best-practice processes the system may have been able to deliver. Misunderstanding the role of organizational change in an ERP implementation may have bankrupted one of the world's largest pharmaceutical distributors.

In conclusion, a successful ERP implementation requires organizational change, and business processes are often reengineered to complement the benefits of the new software package. As we see in the case of FoxMeyer, failure to understand this connection can lead to severe financial woes or even bankruptcy. Because an enterprise-wide implementation is such an expensive undertaking, the role of organizational change cannot be overlooked. The success and failure of many ERP implementations do not lie with the technology, they lie within the organization. A stagnant organization that does not adapt its structure, people, and processes to its ERP system is doomed to fail. The role of organizational change in an ERP implementation is a decisive one that can have dire results if overlooked and spectacular results if embraced.

[1] http://www.ndsu.nodak.edu/ndsu/bklamm/BPandTCreferences/BPTCScott1999Foxmeyerdrugs-bankruptcy%20was%20itafailure.pdf

PREVIEW

Many ERP implementations do not get off to the right start, as shown by the FoxMeyer opening case. An implementation can be plagued from the beginning by a lack of a vision, a set of unrealistic goals that will be achieved by the ERP system, or both. The development of a rationale for change and communicating it to the company will set in motion a number of activities that will help with a clear direction and process for moving forward. This was not the case with FoxMeyer's ERP implementation. The rationale for changing from legacy systems to an ERP system is often a result of using business process reengineering (BPR) to streamline processes and procedures, thereby creating a competitive advantage. FoxMeyer's would have been served better by taking more time in the beginning to set the stage for change with their ERP implementation. ERPs and BPR have become linked over the years. ERP vendors have worked to include "best practices" in their system within a given industry, whereas BPR identifies current processes and the change requirement to implement "best practices."

Although BPR is used to assess the organizational process change needed, the Organizational Project Management Maturity Model (OPM3) will assess the company's level of skills and ability to implement an ERP system successfully. OPM3 is relatively new and has the support of the Project Management Institute (PMI). The OPM3 consists of three steps: knowledge, assessment, and improvement. These will be presented in more detail in this chapter.

Beyond BPR and OPM3, the project organization and roles and responsibilities will start to bring the project into clarity for the business. ERP implementations require their own organizations and reporting structure. Reporting lines, expectations, and even evaluations need to be included in the structure. Staffing the organization with existing staff, new hires, and consultants creates the need for the project management office to develop a sense of teamwork. Teamwork often takes a number of years to develop under normal circumstances. With ERP implementations, the sense of team needs to be something that is addressed early and quickly on a project and will need to be worked on throughout the implementation. The continuity of teams during the implementation helps to ensure that there is a basis for moving forward as decisions are made and business processes change. If an implementation does not have continuity, as found in the FoxMeyer example, it can lead to a lack of understanding of how business processes were changed and why.

REASON FOR CHANGE

What's "Organizational Change?"

Typically, the concept of organizational change is in regard to organizationwide change, as opposed to smaller changes, such as adding a new person, modifying a program, etc. Examples of organizationwide change might include a change in mission, restructuring operations (e.g., restructuring to self-managed teams, layoffs, etc.), new technologies, mergers, major collaborations, "rightsizing," new programs such as Total Quality Management, re-engineering, etc. Some experts refer to it as organizational transformation. Often this term designates a fundamental and radical reorientation in the way the organization operates.[2]

[2] Organizational Change and Development (includes the Field of Organization Development) Written by Carter McNamara, MBA, PhD, Authenticity Consulting, LLC. Copyright 1997–2007. Adapted from the Field Guide to Consulting and Organizational Development and Field Guide to Consulting and Organizational Development with Nonprofits.

ERP implementation projects usually mean radical changes to an organization. This includes fundamental changes in procedures and processes, job functions, and, initially, in the bottom line. According to Appleton, "Approximately one half of all ERP projects fail to achieve anticipated benefits due to managers underestimating the efforts involved in managing change."[3] The decision to implement an ERP must be addressed logically and communicated to key management and staff in order to achieve the desired company goals.

The reasons to move to an integrated ERP system are to improve the bottom line by streamlining business processes and to create a competitive advantage. It was believed for years that ERPs would almost immediately increase profits and provide a short-term return on investment. In most instances this is not the case. Expectations are now changing with the understanding that ERP implementations are much more of a long-term investment. For change management reasons, however, each company must develop a logical and strategic reason to implement an ERP system. Bypassing this step will, at best, result in an ERP system that does not meet management expectations and, at worst, be a complete failure even to get through the implementation.

The rationale to implement an ERP is often a result of an organization conducting a BPR study. These studies both identify process and procedural changes to streamline the business and they identify best business practices that can create industry advantages. In addition to identifying and documenting organizational changes, BPR sets the stage for the implementation. In almost all cases legacy systems will not be able to meet the needs identified in BPR, whereas ERP systems have been sold for a number of years on the fact that they are built around "best practices." In any case, BPR is one of the best methods for determining the need to move to an ERP system and set the high-level goals and project implementation scope.

The next step is to communicate the BPR results to the company so they can begin gaining an overall organizational commitment in replacing legacy systems with an integrated ERP.

ORGANIZATIONAL COMMITMENT

The commitment to implementing an ERP system is sometimes akin to jumping off a cliff with a parachute and hoping it opens. A prime component of a successful implementation is the unwavering commitment and "will" of senior management and key staff to see the implementation through to the end. There will be problems and issues to overcome and resistance to change, both open and passive, so senior management and key staff need to be steadfast in the quest to succeed.

There are two key areas to consider to ensure organizational commitment to the project: components of change management and the OPM3. The first, a component of change management, is a well-defined communication plan. The communication plan should reflect the organizational experience and build upon the ERP benefits and expectations. The second, OPM3, is a process that will help in understanding the existing organizational experience in implementing systems. Using OPM3 will assess an organization's ERP system implementation experience. It will also assist in understanding the implementation skill level and therefore the level of risk involved in the implementation.

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[3] Appleton, E. L. (March 1997). How to Survive ERP. *Datamation,* 43 (3), 50–53.

Change Management

Change management was discussed in Chapter 4. There are also a number of books and research papers on change management that will offer you much more detail on the change management process.[4] The following is a standard definition:

> **Change Management** is the process of developing a planned approach to change in an organization. The objective is typically to maximize the collective benefits for all people involved in the change and to minimize the risk of failure of implementing the change. The discipline of change management deals primarily with the human aspect of change, and is therefore related to pure and industrial psychology.[5]

The mention of change management at this point is to clue you in to the fact that change management must be an integral part of the overall implementation planning strategy to implement an ERP system successfully. The focus of this section will be more on the OPM3 area.

ORGANIZATION PROJECT MANAGEMENT MATURITY MODEL Project Management Institute describes OPM3 as "seeking to create a framework within which organizations can re-examine their pursuit of strategic objectives via Best Practices in organizational project management."[6] In other words it will help companies to understand the level of competency and ability to implement an ERP system successfully. In this case *successfully* means meeting the overall needs of the organization as described in the project scope and delivered on time and on budget. The more skilled companies have a greater chance of implementing ERP systems than those with lesser skills. The lesser-skilled companies can raise those skills through the use of other resources. This can be accomplished through external resources (i.e., consultants) or a combination of hiring new staff with the proper skills and training existing staff to meet the project skill requirements.

The OPM3 model is a three-step continuous improvement process. The steps include knowledge, assessment, and improvement which are shown in Figure 9-1.

For the purposes of an ERP implementation, the steps that need to be addressed to ensure a successful ERP implementation will be clear after the knowledge and assessment steps. The timing of when to start an implementation must be based on the current state of the organization and the plan to improve, if needed. Without the OPM3 methodology or a methodology similar to it, an ERP system implementation runs the risk of not meeting expectations, as well as of being late and over budget. The benefits of an OPM3 analysis are as follows:

- OPM3 helps organizations identify and deliver the right projects to advance their strategy. With OPM3, you will use organizational inputs to align projects across operations and select only the projects that will deliver business results.
- Improved project performance and return on investment with OPM3—experience a shift in thinking that will position your organization for immediate gains and long-term success. OPM3 isolates process improvements while forcing organizations to consider external pressures increasing operational and organizational efficiency.
- OPM3 helps your organization align its strategy with the projects that sustain business success. Through a comprehensive collection of best practices, OPM3 guides your organization on when to stay the course and when to change direction.

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[4] Esther Cameron, *2004, Making Sense of Change Management.* Publisher: Kogan Page.
[5] www.findwhitepapers.com/enterprise-applications/change-management/ (accessed March 5, 2007)
[6] Project Management Institute. (2003). Organizational Project Management Maturity Model. *Knowledge Foundation,* xi.

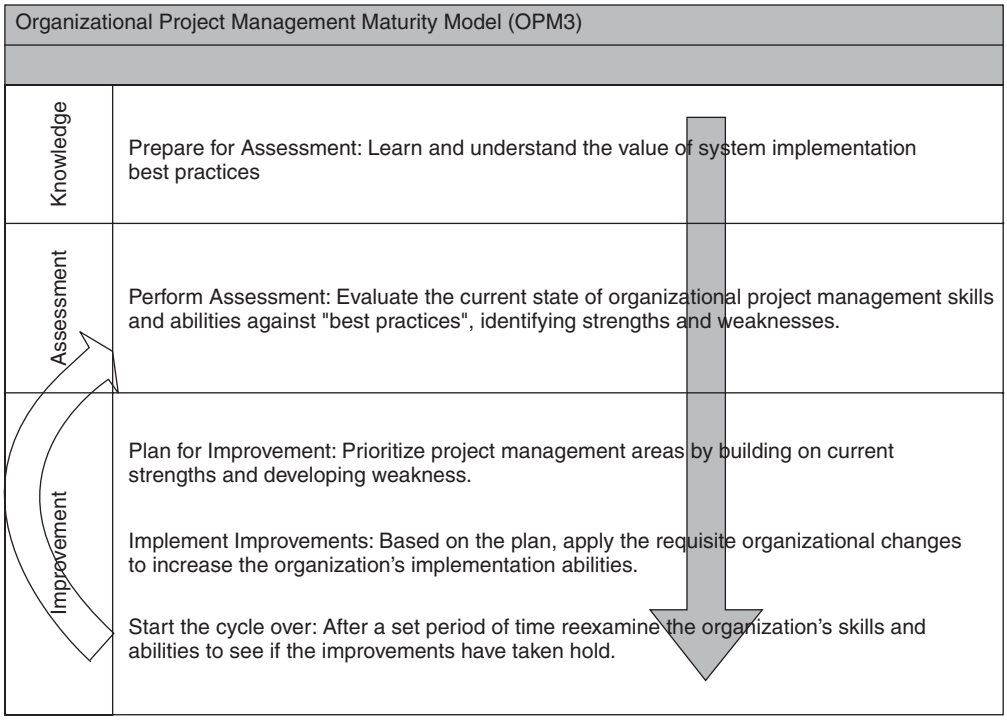

FIGURE 9-1 Organizational Project Management Maturity Model.

- OPM3 mitigates operating costs by keeping projects aligned to business strategy. Scalable by size and maturity, OPM3's diagnostic capabilities can guide any organization to improved performance.

BUSINESS PROCESS CHANGE

As mentioned earlier, BPR is often used as the reason to move from legacy systems to an integrated ERP. To fully utilize the ERP, the BPR results need to be incorporated into the ERP implementation scope and plan and continually measured to understand the effectiveness of the new processes.

Business Process Reengineering

Business process is defined as "a set of logically related tasks performed to achieve a defined business outcome."[7]

A *process* is "a structured, measured set of activities designed to produce a specified output for a particular customer or market. It implies a strong emphasis on how work is done within an organization."[8]

[7] Davenport, T. H., and Short, J. E. (Summer, 1990). The New Industrial Engineering: Information Technology and Business Process Redesign. *Sloan Management Review*, 11–27.
[8] Davenport, T. H. (1993). *Process Innovation: Reengineering Work Through Information Technology.* Boston, MA: Harvard Business School Press.

Reengineering can be traced back to the late 1800s. In those days management theory believed that managers could establish improved and, sometimes, best processes to optimize performance. Of course, information technology and ERP systems did not exist at the time, but as technology improved processes, were adapted to increase profits and better meet customer needs.

Reengineering is now a business process or set of processes that essentially dismantles existing processes into individual activities and puts them back together in a new set of business flows or sets of business flows. This is done to increase efficiencies and improve services with greater returns. When ERP systems are built to apply best practices, you can easily understand how BPR is likely to occur during ERP implementation. BPR within a single unit is difficult and requires efficient and effective change management. BPR with an ERP implementation will require crossing organizational boundaries and a much more extensive change management process. Resistance to change will be high and require a significant level of change management to succeed. This resistance to change comes from several areas, including loss or change in job and change in the power structure. In addition to that, BPR has been equated to downsizing, new technology, and quality, therefore increasing anxiety of staff both involved and *not* involved in an ERP implementation. The creation of teams and development of good teamwork is essential to making BPR changes work for the organization.

BPR Methodology

The BPR methodology, as shown in Figure 9-2, includes the following:

1. Preparation—set goals and vision, identify teams, and develop an inventory of processes that need to be evaluated.
2. Define the "as is" process and evaluate cross-organizational issues.
3. Map out "to be" processes based on best practices (i.e., related to ERP).
4. Test and measure new processes based on meeting goals and vision.
5. Reevaluation—revise, adjust to improve processes.

BPR steps are relatively straightforward and seem on the surface to be benign. The complexity of BPR is in its implementation. The setting up of the measurements to achieve the desired results and the monitoring of new or modified processes are the more difficult sides of BPR. Setting up measurements is the key to improvement. You cannot improve what you do not measure. The following is a brief description of each phase of BPR.

Preparation The very first step in BPR is to develop and articulate what is to be accomplished by reengineering, including goals and scope as it relates to BPR. These goals should be measurable

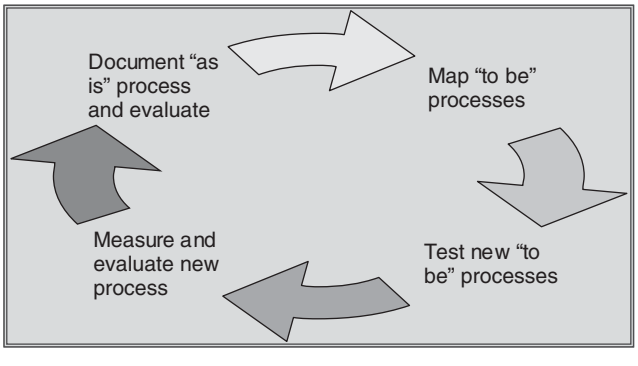

FIGURE 9-2 BPR Framework.

and fully understood by the organization. In the case of an ERP implementation, the functions included in the scope must also be identified. In addition to the goals, during the preparation phase the implementation teams should address goals that need to be created along with an elaborate and extensive communication plan. The teams will be made up of functional users and managers, initially along with facilitators, to walk the teams through the BPR phases. The ERP system is sometimes not purchased until after the "to be" processes are defined and communicated. In that case the BPR process can then be used to define functionality needs and requirements within the system.

Here are some of the drivers behind the need for BPR:

- Implementing a current purchased ERP system
- Automating current manual or error-prone processes
- Improving service to customers
- Streamlining current processes to decrease time to market
- Participating in or conducting e-marketplaces
- Reducing costs
- Addressing accountability
- Conducting e-Procurement

"As Is" Working with the vision and goals, the functional teams must define the existing processes. The processes will need both a written description and graphical depiction of each and every process. Each process will likely have predecessors and successors linking processes together for future analysis in the "to be" phase. Expect a lot of discussion during this phase, especially around processes that cross functional boundaries. This usually results from one functional area not knowing what occurs in another functional area. Ensuring that a process is well understood by the team during this phase will be important for the "to be" phase. There needs to be clarity around decision points for who is responsible and why. Last, the teams will need to develop a sense of timing for each process. This will assist in the measurement process later in the methodology. In working through the "as is" phase it is often tedious and stressful. This can often be countered with team-building exercises and events. Part of the goal of this phase will be to develop good interaction between and among the teams and to prepare them for the much more difficult "to be" phase.

"To Be" This is the phase where facilitators earn their stripes. This phase must address timing of processes and the changes needed to meet the original set of goals. This phase requires much thought and analysis. The questioning of current processes is a must. A team member will often say things similar to, "we've always done it like that." The understanding of *why* a process does what it does needs to be uncovered, irrespective of who does it. Some team members, although not all, will be threatened by the idea of changing a process. It is critical to work through this phase and all the processes objectively and thoroughly. It will assist in developing trust and minimizing some of the anxiety created by the "to be" phase. As stated earlier, this phase dismantles processes and puts them back together with a new sense of purpose. Some processes will even be eliminated, and all new processes must have estimates of timing and who is responsible. This sets the stage for the measurement phase.

If the ERP system is already purchased, then this phase must address the existing ERP system functionality and how the changed processes will work with the system. If the system is not purchased, then the defined processes should be used to compare systems on the market for an organizational match.

Testing and Measurement Even though the "to be" processes are clearly documented and the timing for each process estimated, the testing and validation of each process is necessary to ensure that a step was not missed or that a process not achievable. If the system is already purchased, then

this can be accomplished with a test system configuration. If the ERP is not purchased, then the teams must develop a methodology that will either walk them through the processes or have the vendors set up a test system that will help to validate the new business processes. It will not be perfect, but it helps the teams get a sense of what is doable and what is not. This process often identifies further improvements that can be made. It is essential to set up measurement processes that are meaningful and measure the goals set out in the preparation phase. It may take a couple of iterations of BPR to realize the goals fully, but continuing to examine processes and to make adjustments creates a sustainable ERP system environment.

As noted earlier, ERP systems are based on "best practices." BPR processes are designed to meet company goals and vision. Even though it must be done, care should be taken to address combining ERP and BPR into a single process. This gets back to the overall implementation methodology and how the "to be" processes fit into an ERP system. Almost all purchased ERP systems are very flexible and most of the time can be adjusted to meet organizational vision and goals; however, it is likely it will not "fit" all "to be" processes. This does bring you back to the discussion of modifying the system or adjusting the business process, communicating expectations, and overall governance.

Current BPR Tools

There are a number of BPR tools on the market today to assist in mapping out existing and new business processes. These software packages can help the team analyze the dynamics of existing processes and can provide greater insight to redesigned processes that meet project goals.

Some packages are comprehensive and take teams through the entire BPR process, whereas others address certain market niches. The appendix at end of chapter shows some of the BPR tools currently available on the market.

BUSINESS PROCESS MANAGEMENT

Over the last decade, business process reengineering has become very complex and difficult to implement manually or even with business process reengineering tools mentioned in the appendix, without a structured and consistent approach based on best practices. This has increased the need for business process management (BPM) and similar other approaches that have emerged to help organization with implementing BPR.

According to Gartner, BPM is defined as

> a management discipline that treats processes as assets that directly contribute to enterprise performance by driving operational excellence and business process agility. BPM employs methods, policies, metrics, management practices and software tools to continuously optimize the organization processes to improve business performance against goals and objectives.[9]

The goal of BPM helps achieve "business process improvement (BPI)." BPM improves the performance of business processes of the firm and also the processes involving external parties like suppliers and others in the supply chain. BPM helps to keep the business process model in line the with process execution. BPM tries to increase the agility. The modeling of business processes improves the transparency and makes it easier to change.[10]

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[9] Gartner Research. (July 27, 2010). Hype Cycle for Business Process Management, 2010.
[10] Ibid.

BPM processes have been derived from the study on workflow technologies that aimed at eliminating the manual intervention in the process implementation.[11] BPM became popular in the 1990s for improving the performance of organizations. Business process improvement involved the usage of process benchmarking and BPR along with the implementation of ERP systems. The key for improving processes is for management to understand of the differences between firm's processes and the best practice processes.[12] Management that sees these differences will succeed in improving their business processes. Process improvements occur by knowing the customers better, devising processes to meet the needs of the customer, and continuously reevaluating to keep the focus on high-level performance in this time of rapidly changing environment.[13] BPM institutionalizes this continuous process change in organization. One of the Gartner surveys for top-level executives held in December 2009 showed that more than two-thirds realized the value in using a BPM approach to be successful in achieving their business goals. According to this study, the top-level executives are proactive and think about the high volatility in the marketplace before making the changes in their business models. As per the Gartner 2010 survey, organizations that have BPM system in place spend around 55 percent of IT budget to run the business, while the industry's average spending is 64 percent.[14] IDC research reported that the BPM market increased almost 80 percent in 2006, reaching $890 million, and that this market will expand to $5.5 billion by the end of 2011.[15]

Difference between BPR and BPM

BPR and BPM are not the same, and the differences between them are discussed in this section. BPR suggests that businesses will become competitive by redesigning core business processes. It aims at eliminating the human intervention and automating the process, wherever possible. BPM is not about radical automation; instead, it follows an iterative approach of making incremental improvements in the processes. For any industry, this approach enables to make frequent adjustments to the business processes according to the rapidly changing operational conditions in the global markets. BPM put processes in place to make continual incremental changes rather than aiming at one perfect solution, as the cycle time between changes is really short in current business situation. BPR is all about automation and downsizing of the organization. The aim of BPM is not to eliminate the human efforts, but to understand the dependencies and interactions among the people, system and the information needed to do the tasks better. BPM starts with process modeling to understand the workflows and figure out the manual and automated tasks and to improve the efficiency of the business processes. The business model improves the transparency of the work steps and resources in the business process and also clearly shows the information flows and business rules. The developed business model is then interpreted bythe BPM software (BPMS) and becomes executable. This makes the process to be visible to the managers responsible for making decisions. Managers can modify the model by knowing where the bottlenecks are present. The modifications are reflected in the execution right away. Business managers can easily manage the processes, with IT deciding the implementation of some specific tasks.[16]

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[11] O'Connell, J. (September 12, 2003). Measuring IT's Effectiveness to the Business. *Computer Weekly*, 00104787.
[12] Juan, Y.-C., and Ou-Yang, C. (April 1, 2004). Systematic Approach for the Gap Analysis of Business Processes. *International Journal of Production Research*, 42 (7), 1325–1364.
[13] Baker, B. (August 1997). Process Redesign: The Implementation Guide for Managers. *Quality Progress*, 30 (8), 174, 2 pgs, http://proquest.umi.com/pqdlink?did=13457720&Fmt=7&clientId=1531&RQT=309&VName=PQD
[14] Gartner Research. Hype Cycle for Business Process Management, 2010.
[15] IDC Predicts Rapid Growth for Business Process Management Software Market Reaching $55 Billion by 2011. http://www.askwebhosting.com/story/8347/IDC_Predicts_Rapid_Growth_for_Business_Process_Management_Software_Market_Reaching_$55_Billion_by_2011.html
[16] BPM is Not the Same as BPR, By: Janelle B. Hill, Vice President, Gartner, Friday February 9, 2007. http://www.bpminstitute.org/articles/article/article/bpm-is-not-the-same-as-bpr.html

Best Practices of BPM

BPM systems help managers in understanding the working of the business processes better so as to manage them more efficiently. The successful implementation of BPM requires separation of the following two broad categories of processes from one another.

HUMAN-INTENSIVE PROCESSES These processes are also known as "knowledge work." They depend on people to do the work. The interaction of people with one another and with the business applications and databases are important. Human intervention is required to make effective decisions. Examples: loan approvals, customer service.

SYSTEM-INTENSIVE PROCESSES These processes involve a large number of automated transactions each day that do not require human judgments and can be easily automated, for example, bank transactions processing.

TABLE 9-1 BPM Process Categories

People-intensive processes	Involve a high level of interaction between individuals for routing, approving, and fulfilling requests such as customer service requests, travel, and purchase requests and usually high rates of exception handling. Although this type of open-ended process translates into a need for flexibility on the part of the end user, it doesn't mean that the processes can't be automated in some way, shape, or form.
Decision-intensive processes	They are fairly complex processes that involve gathering and deciphering information and often include mission-critical decision making as well. A rules engine that sets "if then" rules (e.g., at a manufacturing company, a rule could be implemented that said: "notify sales when inventory is lower than 10 and we have more than five pending orders on a Monday") is absolutely necessary for this type of process. Ease-of-information access (i.e., no wasted time in repetitive searches and minimizing multiple database screens) is just as critical for employees performing this type of task.
Document-intensive processes	Require users to review documents for approval, enter data from those documents into a back-office system, and make decisions based on the documents in hand. User activity is driven by information found in scanned images or electronic forms, or often electronic documents created in Microsoft Word or other office automation software tools. Other examples of document-intensive processes include new account opening and invoice processing.
Integration-intensive processes	They are not only descriptive of a certain type of business activity but, according to the Forrester report, also a goal to aspire to for a company looking to cut down on wasted operator time in exception handling, for instance. This means that a best practice in BPM implementations is always to examine the other three types of processes and look for ways to improve on or significantly modify the process to get it to an integration-intensive level.

Source: Adopted from Best Practices in BPM.

BPM Software Vendors

The major BPM software vendors are listed in this section. These vendors have great opportunities, because of the increasing growth rate of BPM market. According to Gartner study, the global market for BPM software was $1.97 billion in 2008 and is estimated to reach $3.17 billion by 2013, at 10 percent annual growth rate.[17]

Forrester Research classifies the BPM software vendors by their functionality, and some players are found in many categories. The categories include integration-centric, human-centric and document-centric providers.[18]

Vendor[19]	Category
Adobe	Document-centric provider. Adobe achieves its BPM market strength from document integration that then automates process.[20]
Appian	Human-centric provider
Cordys	Human-centric provider. Targets mainly services-oriented architecture (SOA) market.[21]
EMC	Document-centric provider[22]
Global 360	Human-centric and document-centric providers
IBM	Integration-centric and document-centric providers. IBM is able to leverage its SOA market dominance to support innovation, providing BPM software that supports flexible response to changing market conditions.[23]
Lombardi	Human-centric provider
MetaStorm	Human-centric provider
Oracle	Integration-centric provider
PegaSystems	Human-centric provider
Progress-Savvion	Human-centric provider
Software AG-IDS Scheer	Integration-centric provider
Tibco Software	Integration-centric provider

Core Business Processes

BPM improves the efficiency of all the core business processes[24] in an organization due to the interactions among the business processes; for example, the order-to-sales process (M/S) and revenue collection (RC) processes interacts with the revenue collection part of the order-to-cash

[17] http://www.crmbuyer.com/story/67813.html (accessed November 5, 2010)

[18] Ibid.

[19] http://www.gartner.com/DisplayDocument?id=1395425&ref=g_sitelink&ref=g_SiteLink

[20] http://www.researchandmarkets.com/research/912168/worldwide_business

[21] http://www.it-director.com/business/content.php?cid=10295

[22] http://www.crmbuyer.com/story/67813.html

[23] http://www.electronics-ca.com/products/Worldwide-Business-Process-Management-(BPM)-Market-Opportunities-Strategies,-and-Forecasts.html

[24] Gelinas, Ulric J., Sutton, Steve G., and Fedorowicz, Jane. (c2004). *Business Processes and Information Technology.* Mason, Ohio: Thomson/South-Western.

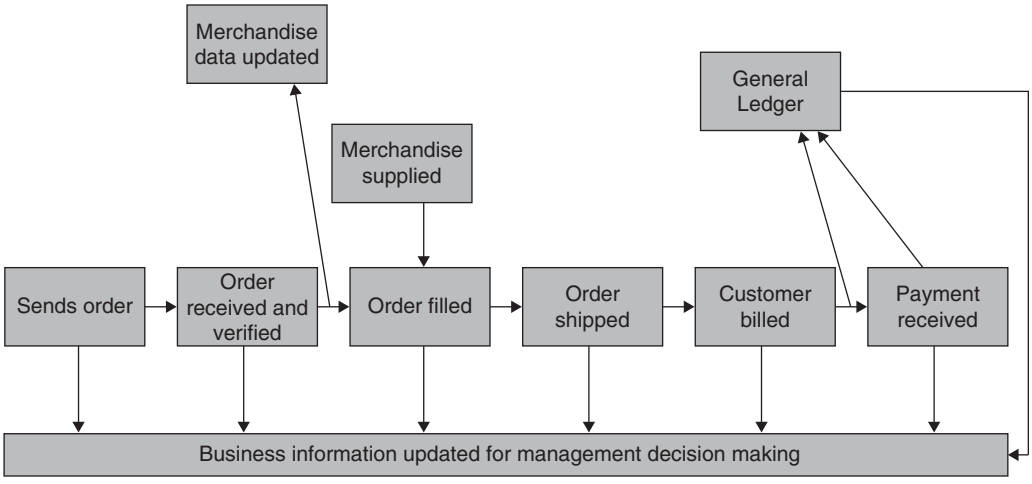

FIGURE 9-3 Example of the Order-to-Sales Process (M/S) and Revenue Collection (RC) Processes.

process, which also interacts with the purchasing and manufacturing processes by sharing information, as shown in Figure 9-3.

The M/S process includes interaction between employees, system, methods, and controls designed to reach the goals. This process has to support the following:

- Repetitive work procedures of the credit department, sales order department, the warehouse and shipping department.
- Requirements of the decision makers of the different marketing and sales functions.
- Information flows and data stored to support the operations and management processes.

The process supports the sales order department in capturing important customer and order information, facilitating the credit granting to the customers, and ensuring the timely delivery of goods to customers. The information flows are automated by the ERP systems.

M/S process involves:

1. Processing of the orders placed by the customers
2. Delivering goods to the customers

R/C process involves:

1. Charging the customers
2. Management of the customer accounts
3. Obtaining payment for the products or services provided

Order-to-Cash BPM Solution from Dell Services

Dell Services' automated, rules-based order-to-cash processing optimizes workflow to reduce costly errors, decrease receivables and DSOs (day's sales outstanding), increase collections, and enhance the customer experience. The Dell/Perot Systems suite[25] includes five modules as shown in Figure 9-4.

[25] http://www.perotsystems.com/MediaRoom/Library/ServiceOverviews/ServiceBrochure_OrdertoCashProcessing.pdf

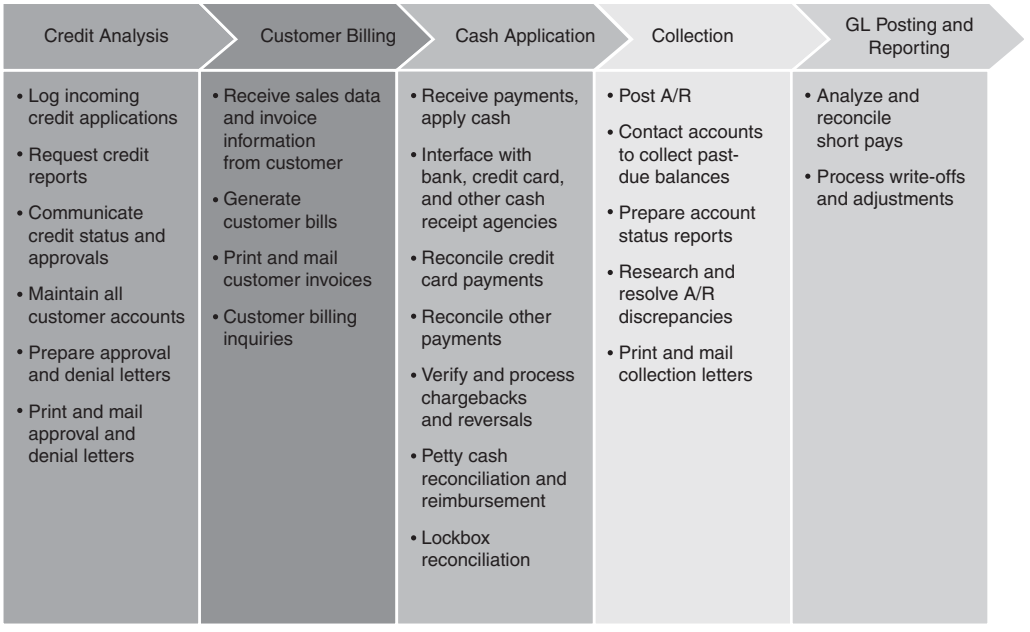

FIGURE 9-4 Example of Dell's BPM System.

SAP ERP Implementation at Tata Steel[26]

The Tata Steel Company implemented ERP in three stages to support their order fulfillment process:

- Generation and fulfillment of the orders
- Financial and accounting processes
- Auditing and assessing the advantages of ERP system

Tata Steel, a major conglomerate founded in 1907 by Jamsethji Tata in India, has been a low-cost provider of steel in the global market. Internationally, the steel prices started to decline and became closer to their costs. The company had to maintain its low-cost image, serve customers with quality products, and also remain profitable by improving efficiency of the core business processes. Tata Steel is spread across different geographic locations and involves many independent applications and hence leading to increase in the number of databases. It was hard to track the finished goods inventory in the different plants and other financial data, as there was no integration of the systems and consistency of information. Management of the processes and decision making became difficult. This led to the need for a central business application to support the core processes.

(*continued*)

[26] Kumar, S., and Keshan, A. (2009). ERP Implementation in Tata Steel: Focus on Benefits and ROI. *Journal of Information Technology Case and Application Research, 11.*

The pilot project was implementation of ERP for order-to-cash process, which included checking the availability of the goods, querying the status of the order placed, and scheduling. The different ERP vendors were analyzed, and, finally, Tata Steel decided to go with SAP.

Here are the objectives of the ERP project implementation: Tata Steel aims at lowering the working capital through reduction in inventory of finished goods and debt overdue. The inventory of finished goods can be reduced by improving the transparency of the goods in the supply chain. ERP system should also facilitate the credit status checking functionality, so that accounts receivables can be effectively managed. Profits can be estimated through ROI calculations like net present value (NPV) and internal rate of return (IRR). The customer debts can also be reduced by keeping track of the credit history. The sales process is integrated with the financial process by information sharing through a centralized database.

Tata Steel decided to use "Accelerated SAP (ASAP) Methodology" (discussed earlier in Chapter 4 and ERP life cycle) to describe the business processes and did not do any customizations, thus saving time. The ASAP implementation involved preparation of project, realization of business prototype, last stage preparations, and, finally, go-live and maintenance. The whole process took nine months to implement. The outcomes of the implementation were very impressive, and five-year NPV was INR 139 million and IRR of 23 percent. The centralized database facilitated the availability of data related to sales in all the global sites. The receivables were collected faster, almost in less than a day. The orders were placed online more easily and at a quicker pace. Finished goods inventory was reduced by improving the transparency, thereby cutting the inventory costs like holding costs and other costs. Thus the pilot project was successful, and Tata Steel proceeded with the other stages and was successful.

Optimizing Business Processes

BPM software helps to optimize the business processes of an organization and improve the performance. This section describes how BPM software functions and helps to improve the business processes. BPM is very important for the process-intensive industries like insurance. Gartner's research says that BPM helps firms to model, analyze, and test business processes without the interference of the core systems and then to figure out process problems more easily. BPM involves proper utilization of people and resources to do the work and also automate the processes that do not require human expertise and judgment.[27] BPM combines a range of features—process design and modeling, integration, and postdeployment monitoring and analytics—but the most important function is to help companies increase process efficiency and, therefore, reduce costs.[28] The visible process models can be fine-tuned or optimized by the managers to serve the customers better. Business process management (BPM) and services-oriented architecture engine markets were at $1.8 billion for licenses, maintenance, and services in 2008 and are forecasted to increase to $6.2 billion by 2015.[29]

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[27] LexisNexis Academic. (July 5, 2010). What can BPM do? *ITWeb Brainstorm.*

[28] Voelker, Michael. (December 1, 2003). BPM Targets the Bottom Line—Enabling Change, Easing Compliance and Maximizing Efficiency, Business Process Management Technology Proves its Value in Cutting Costs. *Transform Magazine.*

[29] http://www.electronics-ca.com/products/Worldwide-Business-Process-Management-(BPM)-Market-Opportunities-Strategies,-and-Forecasts.html

BPM has functionalities obtained from application integration, process modeling and monitoring, and rapid application development tools. BPM software helps to model processes graphically and execute these processes within the business. The software also serves as a tool to measure the process performance, identify the bottlenecks, and then make adjustments more easily at a quicker pace. BPM software improves the method in which people and the applications work. The firms get more agility by developing more new processes as required by dynamic business environments. In short, BPM software is a set of tools that helps a company in extraction and management of the business processes efficiently.[30]

Smaller companies will have simpler workflow that can be easily managed, but as they grow, the workflow gets really complex and hard to keep under control and hence BPM comes into picture. BPM software helps to overcome workflow bottlenecks and improve productivity.

Benefits of Implementing BPM[31]

- Smooth business operations in an organization require communication and synchronization. BPM software aids in facilitating those efforts, resulting in high productivity.
- The employees become more efficient, because the workflow bottlenecks are removed using BPM software and thereby reducing the idle time of the employees. This increases productivity.
- High efficiency means reduced costs, and hence BPM software helps companies to cut costs.
- Employees feel better to work in an organized business processes architecture that was created using BPMS.
- Improved workflow results in better-quality products and services and thus BPMS makes customers happy and improves customer loyalty.

Three governments have implemented BPM projects:

- Kent County, Michigan—BPM software was used to streamline processes like accounts payable and invoice management.
- The City of Norfolk, Virginia—BPMS was used to lower construction permit turnaround time from 19 days to a few days.
- The Supreme Court of Louisiana—BPMS was used to lower the time staff requires to issue Certificates of Good Standing to attorneys from three to five hours a day to one hour a day.[32]

Following are some of the major features of BPM software to manage business processes:

- Process modeling and simulation—Users can directly use the software to design the processes that need to be automated, graphically. BPM software has drag-and-drop features to develop processes.
- Systems integration—BPM software lets other information systems like ERP to be connected to the processes, and hence information can flow between the systems.
- User interaction and collaboration—BPMS has Web forms and other user interfaces to help the user to enter inputs and make other changes to the process.
- Process execution and monitoring—BPMS lets job to be routed through the process steps and sends notifications electronically and also tracks performance indicators of processes.

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[30] O'Connell. Measuring IT's Effectiveness to the Business.
[31] http://office-software.suite101.com/article.cfm/bpm_software_improves_corporate_workflow
[32] Boyle, B. (April 2008). Business Process Management: A New Way to Conduct Operations. *Government Finance Review*, 24 (2).

The benefits of BPM are driven by the "*Four Rs of Process*":[33]

- Roles—establishing a set of defined user roles that will not change with employee absences or departures
- Relationships—identifying the interactions necessary to complete a process
- Rules—developing a fixed set of process steps that will be followed in most situations
- Routing—electronically transferring forms and documents for review, approval, and so on.

BPM software does not want the user to write code and is very user friendly. It facilitates the entire process-implementation life cycle and also interactive tasks like development of business rules that are managed centrally, development of portals and flexible forms, and feedback provided for process improvements. After the process models are developed, BPM software then works on automating, controlling, and recording new processes and also managing the allocation of resources to the different steps. Automation has many benefits like staff time reduction and high-quality services. BPM software also assists in tactical management by giving right information to the right people. It tracks process performance by measuring the time taken for each stage in the process, the number of unprocessed items, and the total time taken to finish the process. The BPM software sends e-mail alert messages, points out bottlenecks at a step, and gives information for effective decision making.

Other Examples of Success Stories[34]

Here are a few other examples of using BPM suite in different organizations like Facebook Inc, AT&T Inc., and McDonald's. The benefits of using the BPM suite by these organizations are also specified.

- **Facebook Inc.,** the famous social networking Web site, uses Oracle E-Business Suite Release to support the order-to-cash process. The suite helps in managing orders, sales process, and also the financials. The suite is integrated with the other applications, thus facilitating the information sharing throughout the organization. It also helps to improve the efficiency and increase the visibility of the business processes. Revenue collection process cycle is automated and also the SOX compliance is taken care of. The suite enhanced the business reporting and forecasting functionalities in order to provide the management with right information to make effective decisions.
- **AT&T Inc.—**The recent acquisitions have forced AT&T to upgrade to Oracle E-Business Suite Release 12 in order to centralize the worldwide accounting operations and also enable SOX compliance of all the global financial data.
- **McDonald's—**It decided to upgrade to Oracle E-Business Suite Release 12.1 to improve the business processes and productivity and also to reduce the downtime.

Role of ERP

ERP and BPM systems are not mutually exclusive. Implementation of BPM software does not need revamping of the existing ERP components. Actually, they both interact with and complement each other. The different hierarchical levels in the organization include corporate, functional, and informational levels (lowest level). The corporate level is "big picture" of the entire enterprise; functional level includes marketing, human resources, and other departments in the organization;

[33] Four Rs of Processes (Adapted from *"Business Process Management: A New Way to Conduct Operations." by, Brenda Boyle.* Government Finance Review).
[34] Customer Success Stories. (April 2010). Information for Success, Oracle E-Business Suite Release 12 and 12.1.

and the informational level includes day-to-day operational activities in a firm. ERP is at the functional and informational levels, and BPM system is at the corporate level. ERP does not satisfy all the process management requirements, but the BPM software aids and enhances ERP. BPMS not only supports workflow methods in ERP systems but also connects processes in other applications. BPM software records process performance metrics and also helps in automation and integration of processes throughout the organization, but ERP doesn't perform these functions.

EXAMPLE 1

At the City of Fresno, California, the link between ERP system and BPM software permits workers to create requests for leave electronically. Workers then use BPMS for checking the requests' status and receive notification e-mails. ERP alone cannot carry out this function.[35]

EXAMPLE 2

In 2009, SAP started working on integrating BPM and ERP, that is, including Net Weaver BPM as a component in ERP suite, to serve the SAP customers better and also provide greater agility to the ERP business processes. SAP is also working on merging BPM and BI to improve the monitoring functionalities.[36]

ERP system implementations aid in thorough redesigning of the business processes and the deployment of new software to support the newly developed business processes (Robey et al. 2002; Ross and Vitale 2000). Estimates suggest that the adoption of ERP is about 75 percent among medium to large manufacturing firms, 60 percent among service organizations, and about 80 percent among Fortune 500 firms (META Group 2004). The ERP system implementation caused greater change with huge impacts on employees, basically changing the nature of workflows and tasks. The importance of understanding change management procedures for implementing ERP is very critical because data indicated that the rate of ERP failures is greater than 60 percent.[37]

ERP software is a great asset in interconnecting the business processes and people and enabling access to latest information among the different divisions and locations. ERP system enables planning, scheduling, and monitoring of the entire manufacturing process. It also helps the organization to centralize the information fed into the system so that it can be shared across different departments like marketing and sales, material management, production planning, and finance and accounting. Thus ERP system provides the firm a chance to reduce costs, turn much more efficient, and reduce the manual intervention and automate the business processes to suit the dynamic business conditions. The ERP included modules like production planning, material management, quality assurance, sales and distribution and financial accounting. The ERP systems bring in great business benefits like increasingly visible operations, integrated business operations, and increased revenues.[38]

[35] Ibid.
[36] Kemsley, S. (October 26, 2009). SAP NetWeaver BPM: A 1.0 Product With Promise. *Intelligent Enterprise*—Online; Manhasset (1524–3621).
[37] Morris, M. G., and Viswanath, V. (March 2010). Job Characteristics and Job Satisfaction: Understanding the Role of Enterprise Resource Planning System Implementation. *MIS Quarterly (0276–7783)*, 34 (1).
[38] Rajendra Chaudhary The ERP Effect. (May 3, 2010). *Express Intelligent Enterprise.* http://www.expresscomputeronline.com/20100503/expressintelligententerprise02.shtml (accessed Mar 28, 2011).

IMPLICATIONS FOR MANAGEMENT

Senior management buy-in and support are needed, but these must coincide with a strong rationale for change. A prime component of a successful implementation is the unwavering commitment and "will" of senior management and key staff to see the implementation through to the end. There will be problems and issues to overcome and resistance to change, both open and passive, so senior management and key staff need to be steadfast in the quest to succeed. In addition, for change management reasons, each company must develop a logical and strategic reason to implement an ERP system. Bypassing this step will, at best, result in an ERP system not meeting management expectations and, at worst, in a complete failure even to get through the implementation.

OPM3 can help to assess the organizational skill set to implement an ERP system successfully, meeting the goals set out at the beginning of the project. It will help companies to understand the level of competency and ability to implement an ERP system successfully. The more skilled companies have a greater chance of implementing ERP systems than do ones with lesser skills. Following the OPM3 methodology will at a minimum identify skill gaps within the organization that must be filled before an ERP implementation starts.

As with most ERP implementations, *using BPR can create a lot of anxiety in the workforce.* Management involvement, especially in the communications to staff on the business process changes, will help to reduce staff anxiety. BPR with an ERP implementation will require crossing organizational boundaries and a more extensive change management process. Resistance to change will often be high and can be reduced with a significant level of change management early in the process and often. This resistance to change may be due to a fear of loss or change in a job and an overall change in the control structure. Over the years BPR has been equated to downsizing because of the new technology, therefore increasing the anxiety of staff involved and *not* involved in an ERP implementation.

BPM can improve success of ERP implementation and institutionalize continuous change of business process in organization. BPR can be scary to the employees as it involves radical changes and job loss; also, in today's competitive business marketplace discrete process change can make the organization ineffective and inefficient. BPM overcomes these problems as management, employees, and partners are all aware and used to the small incremental changes in business processes on an ongoing basis. This can increase the success rate of ERP implementation and bring down the costs of implementation.

Summary

- There are many tools and a significant amount of research in the industry to assist a company in putting together a successful project. Business process reengineering and organizational project management maturity model are two such tools.
  - BPR will help develop rationale for moving from a legacy system to an ERP system.
  - OPM3 will assess the company's skills and abilities to implement an ERP successfully.
  - BPM will institutionalize small incremental changes to improve the success of ERP system.
- In addition to using the tools to understand and communicate the rationale for moving to an ERP system, the project organization must be well understood. This chapter discussed the issues with business process change.