

# Business Process Change in the 21<sup>st</sup> Century

Varun Grover, William J. Kettinger, and James T. C. Teng

*It was all the rage in the early 1990s. But will it still be around in the new millennium? Three University of South Carolina professors who are recognized experts in the field give the answer.*

There are many terms for the phenomenon that swept corporations in the early 1990s: combinations of words like business, process, redesign, innovation, and, most commonly, reengineering. Early books on this topic became phenomenal bestsellers. Consultants repackaged old methodologies, printed glossy brochures, and charged thousands of dollars for their claimed proprietary solutions to “fundamental” business problems. Surveys of senior executives indicated that by the mid-1990s, “reengineering” was the number one initiative taken by companies to achieve strategic goals. Academics, both cynics and proponents, jumped on the bandwagon, writing scholarly prose on why such radical change is good, or why they’ve seen it all before.

Now as we prepare to enter the

twenty-first century, some argue that business process reengineering initiatives are dead. Critics contend that it has not shown itself worthy of the hefty resources spent on these projects, and that, in fact, after more than 10 years of experience, we have learned very little concerning how to effectively change organizations by changing business processes. An opposing school of thought argues that over the past 10 years, we have learned a great deal concerning what works and what does not work in changing organizations via a business process perspective. These advocates of reengineering contend that it has borrowed useful principles and techniques from other management disciplines, been tested against time and experiences, and been incrementally modified to improve its effectiveness as an enduring managerial concept.

University of South Carolina Professors Varun Grover (VG), William Kettinger (WK), and James Teng (JT) at The Darla Moore School of Business have been studying **Business Process Change** (BPC) for the past decade. They have written dozens of scholarly articles, edited two special issues of a major journal, and published two books on business

process change. As a result of this work and that of their colleagues in the Information Systems (IS) area, USC is now widely recognized as a major source of research on information technology, business process change, and electronic commerce. Recently, these three researchers were recognized in *Decision Line* magazine as being 1st, 8th, and 11th, respectively, in research productivity, i.e., number of articles published in the top six journals in their field. (The work of more than 1,200 researchers was examined.) In an attempt to extract the implications of their research on reengineering for the business community, *Business & Economic Review* Editor Jan K. Collins (JC) interviewed these three researchers.

**JC: Why do you think reengineering became such a rage in the early 1990s?**

**VG:** Well, I think a number of forces converged at the same time. Around the mid-1980s, the idea of redesigning business processes was being advanced by large consulting units such as Peat Marwick, and McKinsey. Index Group and Michael Hammer directed programs on

---

**Dr. Varun Grover** is Professor of Management Science/Information Systems in The Darla Moore School of Business at the University of South Carolina. **Drs. William J. Kettinger** and **James T. C. Teng** are Associate Professors of Management Science /Information Systems, also in The Darla Moore School of Business.

cross-functional systems in which several firms were studied (including Mutual Benefit Life and Ford Motor Co.). Later they wrote best-selling books on these ideas. Also at around the same time, the “quality movement” based on the Japanese *Kaizen*, or continuous improvement, had brought the notions of process and performance into management agendas. In addition, businesses were getting frustrated with their ever-increasing investments in newer information technologies that were not yielding commensurate returns in productivity. Couple all this with the economic recession at that time, and you got a bandwagon effect where businesses looking for radical change took the ideas of process, information technology, and cross-functional change to heart. This was referred to as reengineering.

**WK:** In the early 1990s, American business was interested in flexing its muscle. Business leaders were tired of hearing they were behind the Japanese, and they wanted to demonstrate they could take bold actions to set their companies on a positive track. Reengineering took hold in the U.S. as a manifestation of this boldness. We, too, were swept up in this excitement. In 1994, the year our first book was conceived [*Business Process Change: Concepts, Methods and Technologies*. Harrisburg, PA: IDEA Group Publishing, 1995, by Varun Grover and W. R. Kettinger. A second book by these two authors entitled *Process Think: Winning Perspectives for Business Change in the Information Age* was slated to be published in December 1999.], neither Varun nor I had ever edited a scholarly book. We suspected that we would have some difficulty finding a publisher. We soon found this was far from the case. Reengineering was “hot,” and publishers were eager to support us in bringing together the leading thinkers on the subject. This early research project opened our eyes. We quickly realized that the lead thinkers were primarily consultants who spent much of their time promoting the reengineering

concept and their own expensive proprietary consulting approaches. These consultants did a lot to build reengineering fervor, but generally did not provide substantial answers to the conditions that result in successful projects. It was at this point that we decided as a group to dedicate considerable research effort in putting together a long-term research program to understand business process change, its principles, and the conditions of its success.

**JT:** The convergence of forces in the early '90s that Varun described certainly unleashed a torrent of momentum toward reengineering.

---

### “Early books on this topic became phenomenal bestsellers.”

---

Among those forces, the role of information technology (IT) is particularly noteworthy. By the early 1990s, the power and potential of IT had reached a critical stage of maturity. Technologies such as shared databases, client-server architecture, and imaging could be readily applied to facilitate processes that span different functional departments. Further, IT continued to develop throughout the '90s with the onslaught of the Internet, Web sites, and enterprise resource planning technology, providing even more opportunities for reengineering. The movement has gone beyond intra-firm processes and now reaches inter-firm processes linked to suppliers and customers, i.e., e-commerce. While reengineering involves much more than the application of IT, it is important to realize that IT is a powerful enabler. Without it, much of the reengineering work would not have been possible.

**JC:** I notice you now refer to it as **Business Process Change**. Is that the same as reengineering?

**VG:** Yes and no. I think the “slash and burn” mentality that pervaded corporations during the earlier part of this decade has been tempered with a more realistic view of reengineering. Unfortunately, many corporations responded to reengineering by performing major work force reductions under the aegis of reengineering. Such efforts are not strategically driven, and lead to firms losing vital components of the work force that would make them creative and productive in the long run. Optimizing process at the cost of people has been said to be a major problem of reengineering. Now, with recessionary pressures alleviated, we use the term “Business Process Change” to reflect the importance of process instead of radicalness. It seems that the strong positions of “radical change,” “core processes,” “top-down,” “breakthrough performance,” and so on, are giving way to the reality that there is more than one way of conducting change. Incremental and continuous approaches with bottom-up involvement within functions might be appropriate for some companies and not for others. Classical reengineering might be appropriate for others. While these approaches (e.g., Total Quality Management, or TQM, and reengineering) were diverging just a couple of years ago, they now seem to be converging.

**WK:** Typically in an early lecture in one of my classes, I ask a student to come to the board and draw a picture of a company where she or he has worked. Inevitably, they draw a hierarchical organization chart — the student is typically on the bottom, and the bosses are on top. I respond that if this is a picture of a company, then where are the customers, and how do products and services get produced, delivered, and improved? This pushes them to draw a horizontal, or process-based representation, of the company which explains these relationships. Soon the board is covered with every conceivable business process — order fulfillment, product development, quality assurance, and on and on. These students

quickly see that a business process is nothing more than logically related tasks that use the resources of a company to achieve a defined business outcome. This is a simple, but powerful, concept! Within a few classes, these students have internalized a process view (or "process think," as we refer to it) that helps them conceptualize new ways to improve operations, satisfy customers, and make the best use of the latest information technologies. Similar to the way these students learn process thinking, employees at all levels have grown to incorporate a process view into all aspects of their work. As process thinking has become mainstream, reengineering has lost its radical tone. We have seen reconciliation with more incremental process change methods such as TQM. Today we recognize that we must broaden the business change tent to accommodate radical business objectives, incremental implementations, and both top-down-driven and bottom-up-driven process change.

**JT:** My impression is that this process of maturation that Varun

described is taking place on a very wide scale. The classical "green field" approach to reengineering is clearly not sustainable. Michael Hammer's first book, *Reengineering the Corporation*, is subtitled "a manifesto for business revolution," but revolution fever cannot last forever. By being more inclusive and accommodating, the movement has become more sustainable, and I believe it will be practiced in one form or another for a long time.

**JC:** From your research, can you tell us anything about companies that take on these radical changes?

**VG:** Interestingly, we have found

that firms that have a certain level of interaction across departments and have a good distributed (client-server type) information architecture are more likely to take on process change. This is a bit surprising since you would suspect that they need it least. But I think the highly functional and bureaucratic environments often have to "react" to environmental pressures before taking on major change, rather than realizing it internally. This is because they are simply not positioned or are too functionalized to recognize the need for cross-functional change. Everyone is too busy doing their own job and trying to please their own boss rather than looking at the overall effectiveness of the organization.

**WK:** In general, radical changes have not occurred from most reengineering projects. Earlier reengineering projects used the concept of "radicalness" to engender manage-

---

"... we found that companies that had been adept at using IT [information technology] for strategic advantages also tended to be more aggressive in launching the reengineering initiatives."

---

ment support, promise high-level performance payoffs, and establish organizational inertia. Research now shows that the obstacles of time and expense, slow middle management and employee buy-in, and problems in modifying legacy technology architectures all result in incremental implementations of radical plans. Is this bad? I don't think so. As employees incorporate process thinking into their everyday jobs, they are in a better position to make incremental improvements that help them individually, as well as see the "big picture" of how their job relates to other employees across different functions.

**JT:** Our research has revealed that the reengineering initiative is essen-

tially an organizational and strategic phenomenon. In addition to a certain level of interaction across departments, we found that companies that had been adept at using IT for strategic advantages also tended to be more aggressive in launching the reengineering initiatives. In fact, such cultural readiness and strategic orientation prepare an organization better for the trials and tribulations of reengineering, and the prospect of eventual success was higher for these companies. On the other hand, IT expertise contributed to the initial thrust, but did not play a significant role in the ultimate success.

**JC:** Has reengineering been successful? I heard there were many failures. Did your research give you any insight into why these projects failed?

**VG:** We studied over 100 reengineering projects. I think the one factor that seems to consistently emerge as critical is *the importance of change management*. Failures often occur because companies don't effectively

manage change and human resources. Employees are often worried about their job security and what is going on in those reengineering committees at the top. Perhaps the biggest challenge associated with the success of the reengineering phenomenon may be that of selling such a major change to the employees of the organization and getting them to "buy into" the strategic changes that must be undertaken for the firm to survive and prosper. For example, outsourcing activities that don't contribute to core competencies or technology to other firms that can perform them better may be a legitimate outcome of a good reengineering effort. It would lead to work force reduction, but only with the

purpose of making the firm leaner and more responsive. Time-based competition and the creation of "agile" corporations may not even be possible without such changes in work force size and composition. As companies emphasize the notion of capturing and leveraging "knowledge" as a source of value, a broader focus on process change management may perhaps be the only way to avoid skill obsolescence of employees and encourage horizontal career paths. The extent to which top level management can sell such a vision of change and its impact on the employees is critical. We found that often information technology problems are considered critical before the project, but it's the management of people and change that really makes the difference.

**WK:** Numbers vary, but many estimates suggest that up to 50 percent of the radical reengineering projects resulted in failure. Our research examined those factors that influence success. Based on this research, a profile of a BPC success story looks something like this:

The company was led into a BPC project by visionary senior managers who recognized the value of bottom-up participation of line workers and middle managers in process redesign and implementation. The successful company did an assessment of its cultural readiness for change and took appropriate actions early on to minimize resistance. Employees at all levels were asked to challenge their existing assumptions concerning how things worked and how they learned. In successful projects, BPC projects teams used well-honed methods, techniques, and tools of process management, many of which were borrowed from TQM and Human Resources. An effort was made to get the IT support people talking with the business people to facilitate knowledge sharing across functions. In successful companies, redesigned processes improved communication within the company and also outside with customers and suppliers. A special effort was made

---

**“. . . it is important to accompany technology imperatives with process and organizational changes.”**

---

to empower individuals and teams and generally improve the quality of the company's work life. At every stage of the business process redesign, the question was asked: How does this add customer and shareholder value? Finally, these success stories measured their overall business performance before and after BPC, and made continuous adjustments to their process redesigns after implementation to ensure they achieved a direct effect on their bottom line.

**JT:** It is impossible to overemphasize the critical importance of the "depth" dimension of the change unleashed by reengineering. We found that the prospect of reengineering success is dim if the change effort is "shallow" — just change the procedure, cut a few unnecessary steps, and combine a few other steps in the process without paying attention to the deeper aspects of change. These deeper aspects include culture, performance measurement, incentive systems, skill development, and structural realignment, among other things. Our research findings demonstrate convincingly that firms that did a more thorough job in managing these deeper dimensions of change achieved much higher success in reengineering.

**JC: Are there any methods or techniques that can help companies accomplish reengineering, or do they have to hire a consultant?**

**VG:** In general, I think there has been a lot of repackaging of old methods by consultants under the guise of reengineering. For them, it essentially becomes an issue of hav-

ing a screwdriver and searching for the right screw, rather than the other way around. My colleagues are more qualified to speak on this issue, having recently concluded an outstanding project sponsored by NCR Corporation.

**WK:** Yes. We went to a number of corporate sites and studied the methods of this global provider of computer products and services. We found that all methods and techniques do not work equally well in all situations. Project leaders should customize their BPC methods and techniques to fit their unique needs. There are several project characteristics that are most important in determining which methods should be used and which techniques employed. First, if the degree of change is highly radical, the project should spend additional time on such activities as establishing management commitment, informing stakeholders, and defining new process concepts. In addition, more radical projects require more time spent on redesign of human resources. Secondly, the more a process is structured, the greater the emphasis should be on detailed process-mapping using sophisticated techniques as well as formal prototyping of the new process. If the process has high customer involvement, projects should concentrate more effort on detailing customer requirements through such techniques as focus groups and quality function deployment. Finally, if the project can benefit highly from using IT, extra emphasis should be devoted to information requirements analysis and testing through the use of such techniques as computer-aided systems engineering.

**JT:** Well, the repackaging of old methods Varun talked about is not necessarily bad. A large collection of management improvement methods and techniques accumulated over the decades are now labeled as "reengineering techniques." It is important to realize, however, that these older techniques are being integrated into an overall methodolo-

gy for reengineering. In other words, these methods can be used jointly to achieve a certain synergistic outcome in reengineering. After 10 years of research in this area, I am still very excited about reengineering, both the concepts and the methods. To me, the methodology of reengineering represents a repository of knowledge and wisdom in management. If you want to systematically understand and apply a set of classic management techniques, reengineering methodology would be an excellent place to start.

**JC: Your area is Information Systems. What do information systems have to do with reengineering?**

**VG:** The power of modern information technologies is one of the major impetuses for reengineering. With client/server architectures, powerful personal computers and networks, Intranets and Internets, enterprise systems, the notion of greater information for all organizational members and shared information and knowledge, modern information technologies facilitate empowerment and cross-functional and cross-organizational communication, which are key concepts of reengineering. However, *it is important to accompany technology imperatives with process and organizational changes.* Information technology is just one important key to better organizations. Without accompanying changes in processes, decision-making structures, incentive systems, and the roles people play in organizations, commensurate results will not be produced.

**WK:** Similar to the way that process thinking has grown to be commonplace in most organizations, so has the recognition that IT fundamentally underlies most sophisticated business processes. While business process change can occur without substantial IT investment, our research has shown that IT is a

viable enabler of many BPC projects. This is particularly true in the implementation of enterprise resource planning software systems from such IT companies as SAP, Oracle, and PeopleSoft. And IT has taken on an even more vital enabling role with the recent rush to introduce e-commerce, which requires firms to design whole new digital channels for the sales and distribution of their products and services.

**JT:** This is an exciting time for those of us in the information systems area. In most cases of IT-enabled change phenomena, including reengineering, we play the role of "gatekeepers" and are among the first to study it. Our field is interdisciplinary in nature. When we study reengineering, we have a broad scope for examining this multifaceted phenomenon, not just the IT part of it. We are very fortunate to be at the forefront of a change process that promises to transform not just business, but the economy and society as well.

**JC: Where do we go from here? Any general lessons for businesses?**

**VG:** By bringing processes to the forefront, reengineering caused managers to take a lateral rather than vertical view of organizations — obviating many prescriptions in management textbooks and challenging the fundamental nature of work. Therefore, perhaps *process change* is the key sustainable management concept here, with organizational success dependent upon how well this change is implemented and accepted, and the process of change itself imbibed and institutionalized. Perhaps another sustainable notion is that of "process management," which involves the planning, structuring, and evaluation of business processes. Firms should engage in process management and apply a multitude of methods to gather information, redesign (perhaps radically, followed by incrementally), and

assess their processes. This portfolio of change programs could include some high risk/reward programs and some low risk/reward ones. *One thing is certain: reengineering is inter-disciplinary and should transcend functional boundaries.* Integrated thinking about organizations is necessary, and any parochial perspective will only encourage organizational resistance to change. It will also locally optimize the process rather than enable a global optimum for the organizational, and in many cases, the inter-organizational, unit. Also, a good change management program must accompany the rational aspects of process change.

**WK:** Many successful companies are now well along on their journey to understand business process change. I have witnessed a learning-curve effect whereby the longer a company deals with these issues, the more effective it becomes in later BPC projects. Competitive pressures, coupled with advances in technologies, will continue to demand that companies overhaul their business processes. However, I believe the days of unbridled "green field" reengineering have drawn to an end. Future benefits in process change will have to be gained through careful strategic planning and through the use of more sophisticated methods and techniques.

**JT:** Again, we are talking about the interdisciplinary nature of the IS field, and this is particularly evident in the study of process management. From time to time, I try to remind myself that we are teacher-scholars. We must transfer the rich knowledge resulting from our research to the students. As process reengineering and management becomes institutionalized, the next big challenge for us is to develop a multidisciplinary approach in teaching the concepts and methods, so that the new generations of managers can be well prepared to meet the challenges of the information age. □