

Tutorial

# Business process reengineering: A tutorial on the concept, evolution, method, technology and application

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## Abstract

It is ironical that while much is being discussed about business process reengineering (BPR), most companies are still searching for methods to better manage radical change. Academics are studying the phenomenon but precious little has been published. Many basic questions remain unanswered. What does reengineering involve? Are there methods for effectively accomplishing BPR? Why is it so popular? Is there a logic behind reengineering? Is BPR fundamentally different from old Taylorian approaches to industrial engineering based on task decomposition and specialization? Is BPR the same as TQM, restructuring, etc.? What is the relationship between process redesign and organizational structures? How do we best plan, organize and control BPR efforts? Under what conditions will BPR be most effective? Answers to these questions are neither easy nor direct. However, this tutorial seeks to address them in a systematic, comprehensive and unbiased manner. In doing so, the tutorial will attempt to synthesize a variety of material from both practitioner and academic literature sources into a coherent précis that defines and discusses BPR in a language palatable to both the manager and the academic. A variety of frameworks will be presented to clarify the nature of the phenomenon as prescribed (in theory) and as companies are learning about it (in practice). The objective of this tutorial is to inform rather than provide an academic discourse. © 1997 Elsevier Science B.V.

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## 1. The hype

Reengineering, or business process reengineering (BPR) as it is commonly called, is the buzzword of the 1990s. The dramatic success stories have been touted again and again in the popular press: “Ford cuts accounts payable headcount by 75%”; “Mutual Benefit Life improves insurance underwriting efficiency by 40%”; “Xerox redesigns its order fulfill-

ment process and improves service levels by 75 to 97% and cycle times by 70% with inventory savings of \$500 million”; “Detroit Edison reduces payment cycles for work orders by 80%” (see Fig. 1 for illustrations of reengineering). If improvements are so dramatic, is BPR the panacea for organizational ills or is it just the latest recipe being offered for business survival?

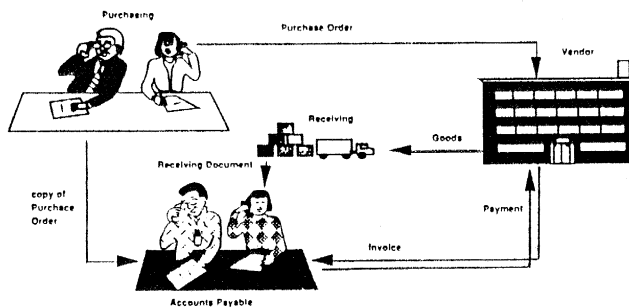
Everyone seems to have an opinion on it. There are enough terms for it or its variations that use combinations of the words business, process, redesign, reengineering and innovation. Early books on

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## BEFORE

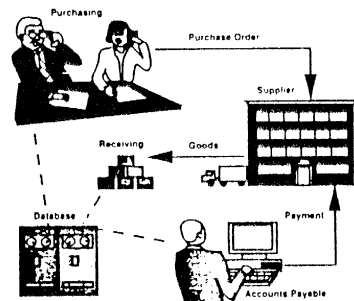
A number of paper documents were processed sequentially by 3 functions who participate in the process indirectly with a work force of 500 clerks to perform many intermediate steps:



- The purchasing function issues a purchase order to the supplier and sends a copy to the accounts payable function.
- Upon arrival of purchased goods, the inventory function sends a copy of the receiving document to the payable function.
- When the invoice from the supplier arrives in the mail, the payable function matches it against the purchase order and the receiving document before issuing payment to the supplier.
- Much efforts are needed to resolve frequent discrepancies between the documents, and a total of 14 data items must be checked in the process.

## AFTER

With a work force of only 125, the 3 functions participate in the process directly by accessing a shared data base, eliminating many intermediate steps and sequential flow of paper documents:



- The purchase order is entered into the shared data base by the purchasing function.
- Upon receiving goods, the inventory function accesses the data base. If a match is found, the goods are shipped and the status of the order in the data base is updated. Otherwise, the goods are returned to the sender.
- The payable function routinely access the data base to prepare payment checks for orders that have changed status, and invoices from suppliers are eliminated.
- Matching and discrepancy resolution of paper documents are no longer needed, and only 3 data items need to be checked in the process.

Fig. 1. Two examples of business process reengineering: (a) Ford's accounts payable process, (b) Detroit Edison's work order process. (Adapted from Hammer, 1990.)

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