Factors Affecting the Use of Information Technology in Business Process Reengineering

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Rapid changes in the business environment are causing organizations to dramatically redesign how they do business. Business process reengineering is the fundamental redesign of business processes to achieve dramatic improvements in organizations. Business process reengineering cannot redesign business processes without the support of fundamental aspects of the organization, such as strategic planning, personnel, change management, and information technology. This research project surveyed 43 companies and identified six factors that impact the use of information technology in business process reengineering: IT-based reengineering modeling and methodologies; direct IT business process support; IT supported change; reengineering directed IT/IS development; post-reengineering IT impact; and comprehensiveness of strategic IT support.

Increasing levels of change in competition and technology in the business environment are causing organizations to dramatically alter their business strategies, information architecture, and methods of conducting business (see Drucker, 1988; Leavitt and Whisler, 1958; Mintzberg, 1981; Whisler, 1970; Tapscott and Caston, 1993; Morton, 1993; Naisbitt and Aburdene, 1985; Hammer, 1990; Greiner, 1991). This widespread change is placing some organizations at a competitive disadvantage while providing others with an opportunity to use change to redefine their business methods and gain competitive advantage (Hammer, 1990; Champy, 1990; Scott Morton 1993). In recent years, one of the more prominent approaches to making changes in business methods is business process reengineering (BPR), which is primarily concerned with making changes in business processes.

Hammer and Champy (1993, p. 32.) defined BPR as, “the fundamental re-thinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed.” Today’s organizational change agents view BPR as a method of rebuilding an organization to better suit the business environment in which it competes; e.g., identifying the need for change and then making changes.

Information technology (IT) is one of the most cited potential enablers of BPR (Hammer and Champy, 1993; Venkatraman, 1993; Keen, 1991; Harrington, 1991). This research studied the role of IT as a change enabler and its influence on identifying changes that need to be made, analysis of those changes, design and development of the changes, and implementation of those changes.

This study sought to provide a list of factors that influence the use of IT in BPR and features of those factors that organizational change agents should consider while participating on BPR projects. This information should support developing strategies to facilitate the informed use of IT for BPR. Considering the potential long-term damage that major change may hold for organizations and the reported low success rates of completed BPR projects (see Jones, 1994; Manganelli and Klein, 1994), better familiarity with the underlying dimensions that influence one of the primary enablers...
of BPR should be important. At the start of the research, it was believed that organizational personnel armed with that information would more readily know how IT could aid in getting the organization ready for BPR changes, aid BPR participants in making those changes, and help them institutionalize those changes.

**Review Of Relevant Literature**

BPR provides a fresh perspective in making changes with respect to inadequate organizational operations in a highly competitive environment. Hammer (1990, p. 104) is credited with initially identifying this fresh approach to organizational change when he stated, “...reengineering work: don’t automate, obliterate.” Davenport (1993, p. 1) helped further this approach by advocating, “...process innovation: which combines the adoption of a process view of the business with the application of innovation to key processes.” Harrington (1991, p. 20) added the concept of, “...business process improvement: a systematic methodology developed to help an organization make significant advances in the way its business processes operate.”

Hammer and Champy (1993) emphasized that BPR is large-scale, radical change. Damanpour (1991, pp. 555-6) pointed out that radical change produces “fundamental changes in the activities of an organization and represents a minor departure from existing practices, as opposed to incremental changes which result in little departure from existing practices.” Organizational development specialists require a clear distinction between incremental or evolutionary change, and radical, large-scale or revolutionary change (Barczak et al., 1987; Mezias and Glynn, 1993; Miller, 1982; Armenakis et al., 1993). “Over time incremental changes can increase inefficiencies, large-scale change can counter the movement toward inefficiency and involves an overall reorganization of parts into a harmonious or symmetrical relationship” (Barczak et al., 1987, p. 26).

Thus, this research restricted its data collection to subjects that were participants on BPR projects with an objective of making changes that would have dramatic impacts on the organization and its personnel. The criteria used to restrict participation on the research project was the determination of the potential strategic impact of the BPR project(s). BPR projects that stretched across multiple functional areas were deemed to have possible strategic impact, and thus produce fundamental change in the organization.

Barczak et al. (1987, p. 26) identified a number of key elements that “involve the dissolution of existing patterns (structures or processes) and the creation of new ones.” The key elements are:

1) Pattern Breaking: freeing the system from structures, processes or functions that are no longer effective or useful;
2) Experimenting: generating new patterns better suited to the present environment;
3) Visioning: choosing a new perspective around which a system can reorganize;
4) Bonding and attunement: harmonizing members to move the system toward new ways of doing, thinking and learning (Barczak et al., 1987, p. 26).

This model has its roots in the classic Lewin (1951) model of unfreezing, moving, and refreezing, as do many change intervention strategies. Armenakis et al. (1993) defined the change phases as willingness/readiness for change, adoption of change, and institutionalization of the change. Armenakis et al. (1993, pp. 681-2) defined willingness or readiness to change as “a factor which contributes to the effectiveness with which organizational changes are made, and may act to pre-empt the likelihood of resistance to change, increasing the potential for change efforts to be more effective.” Using the change models of these three research reports, this research was performed to analyze the impact of IT on each portion of the change cycle inherent to BPR; e.g. analyzing the impact of IT on readiness for change, unfreezing, making needed changes, and institutionalizing those changes.

IT can provide much support for those responsible for making changes in the organization. Venkatraman (1993, p. 122) advanced this perspective by stating that, “...IT-induced business reconfiguration: the structural and process changes required of a firm given the present level of competitive threats and opportunities... with increasing investment in IT.” MacDonald (1993) furthered this perspective by emphasizing the role of IT as a change enabler for business strategy development, alignment, and redesign. Tapscott and Caston (1993) advanced this notion further relative to their study of reengineering the business through IT. While the terminology differs widely as seen from the statements of these and other researchers, BPR research suggests that IT-enabled change of business processes is a solution to operational inadequacy in today’s highly competitive business environment.

**IT Enabled Change**

Many BPR studies cite IT as a fundamental enabler of organizational process redesign (Naisbitt and Aburdene, 1985; Hammer, 1990; Hammer and Champy, 1993; Davenport, 1993; Harrington, 1991; Venkatraman, 1993; MacDonald, 1993; Tapscott and Caston, 1993; Grover et al., 1993; Davenport and Short, 1990). Davenport (1993) stated that as an enabler, IT impacts the preparation for BPR, the process of BPR, as well as the implementation of BPR.

Benjamin and Blunt (1992, p. 7) stated, “It is anticipated that technology cost-performance improvements will continue to drive ever-larger change processes for at least the rest of the decade.” Benjamin and Levinson (1993) specifically addressed a framework for managing IT-enabled change by recognizing the individualistic and unique qualities of IT-enabled change. They state that, “these IT-enabled change