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Business Process Change and Organizational Performance: Exploring an Antecedent Model

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ABSTRACT: Many organizations have undertaken major business process change (BPC) initiatives over the past ten years. Earlier thinking on this topic indicated a significant role for information technology in these initiatives, while more recently the importance of change management has been emphasized. This paper examines a model that proposes various antecedents to successful BPC. Three case studies with varying degrees of BPC project success are described in the context of this model, with the specific goal of determining facilitators and inhibitors to the success of these change efforts. The results indicate that the successful project tended to have facilitators in all dimensions of the framework, including the change environment, process management, and change management. The least successful project exhibited inhibitors primarily in the area of cultural readiness and change management.

KEY WORDS AND PHRASES: business process change, business reengineering, case study, facilitators and inhibitors, successful process change.

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In recent years, both academics and practitioners have challenged the ways in which organizations structure themselves. Traditional models of hierarchy and control have been described as pathological, appropriate for an erstwhile era of stability but inappropriate for today's dynamic business world. Organizational change has been advocated over the past decade under banners of downsizing, restructuring, and business process reengineering. These projects often engender themes of empowerment, teamwork, and customer orientation. While billions of dollars have been committed to redesign of organizational business processes, including investment in technology infrastructure, consulting, and people, the results are ambivalent at best. Some reports indicate that as many as 70 percent of reengineering projects fail. The question is: Why? Clearly, with a critical mass of business process change (BPC) projects behind us, the time is ripe for leveraging their collective experience and isolating key attributes of successes and failures.

While a number of recent studies have attempted to investigate BPC and organizational change endeavors, they are mostly limited in scope. Three attributes characterize recent work on BPC. First, they are often atheoretical. This would suggest that the diverse research streams in strategic management, innovation, organizational behavior, implementation, and the like provide only limited guidance on change efforts. Second, these studies suffer from a limited repertoire of variables, often isolating their scope of investigation to information technology (IT), strategic orientation, or change management. While circumscribing the research domain of BPC in this manner is effective in channeling research resources, it precludes investigation of a phenomenon that has a wide variety of contingency factors. Third, many recent studies look at single organizations and single BPC projects. The advantages of in-depth case studies notwithstanding, without variance or divergence in variables, it is difficult to interpret results in a manner that instills confidence in terms of external validity.

The research challenge, then, is one of leveraging existing theory and examining diverse attributes of BPC across multiple contexts. Such an approach, if accomplished through cross-case analysis, can complement theories that assume an invariant relationship between independent and dependent variables. While we make no pretensions of having eliminated the concerns outlined above, we attempt to examine antecedents to BPC outcomes by applying a theoretical framework that includes a wide variety of variables consistently across three case studies with diverse outcomes. Our central question is simple: What factors facilitate and inhibit the success of large-scale BPC endeavors?

Research Model

The concept of BPC has evolved over the past several years. The radical tone of earlier business reengineering has been somewhat tempered by a degree of contextual realism [11, 23]. Further, earlier practices and writings espoused an IT-centric position, which is now being reconciled with a more holistic approach to BPC [30],
including consideration of IT, organizational structure, strategy, information, change management, evaluation methods, and more incremental process change methods such as total quality management (TQM) [38].

BPC is defined here as an organizational initiative to design business processes to achieve significant (breakthrough) improvement in performance (e.g., quality, responsiveness, cost, flexibility, satisfaction, shareholder value, and other critical process measures) through changes in the relationships between management, information, technology, organizational structure, and people [51]. These initiatives may differ in scope from process improvement to radical new process designs that are contingent upon the degree of change undertaken in each organizational subsystem and their interactions. Therefore, in any examination of BPC outcomes, consideration should be given to (a) the environmental conditions for change and (b) the ability of the organization to manage change in those conditions. Kettinger and Grover [50] considered both of these aspects in the BPC management model shown in figure 1 and described briefly below. This model guides our study of facilitators and inhibitors of successful BPC.

The relationships presented in the framework are based on relevant work in organizational change, strategic management, innovation, and information systems (IS). The general thesis of this framework is that any significant business process change requires a strategic initiative where top managers act as leaders in defining and communicating a vision of change. The organizational environment, with a ready culture, a willingness to share knowledge, balanced network relationships, and a capacity to learn, should facilitate the implementation of prescribed process management and change management practices. Process and change management practices, along with the change environment, contribute to better business processes and help in securing improved quality of work life, both of which are requisite for customer success and, ultimately, in achieving measurable and sustainable competitive performance gains.

Each component of the framework is described below as it is applied to the subsequent case analysis. Following the description, salient dimensions of the component, referred to as "constructs," are identified. During the case study, each construct is probed so that we can classify the organization into several categories. For example, one of the constructs for the "strategic initiatives" component is stimuli, and the resulting probe classifies an organization into one of two categories: proactive versus reactive.

Strategic Initiatives

Process change typically begins with strategic initiatives such as envisioning, commitment, and enabling from the senior management team [54]. These could be a reaction to a need (e.g., poor performance) or a proactive push to leverage potential opportunities [23]. Evidence also exists that strategic change, and arguably process change, is often incremental, informal, emergent, and is based on learning through small gains [38, 67, 68]. Top management is key in establishing innovative organiza-
Figure 1. A Theoretical Framework of Business Process Change Management
Adapted from [50]
tional cultures [30, 93]. Transformational leaders create a vision for the organization that generates commitment using involvement-oriented management [35, 72]. This vision might establish a sense of urgency [54], encourage the pursuit of change [90], and be integrated at some point with corporate strategy [23, 30]. Initiatives could be forced on the organization through mandate (autocratic) or pushed through consensus within existing systems of the organization (bureaucratic) [79]. Alternatively, champions of change could emerge to seek out creative ideas and make them tangible [89] through coalition building, knowledge sharing, and persuasion [8, 64]. In sum, the strategic initiatives involve delineation of a specific plan of action and then motivate the entire firm toward achievement of this goal.

Therefore, the key constructs that can be probed here are: \textit{stimuli} (proactive versus reactive), \textit{formulation scope} (incremental versus revolutionary), \textit{decision making} (autocratic, bureaucratic, champion emergence), and whether the change process is \textit{strategy led} (onset, eventually, none).

Learning Capacity

Organizational learning has been the subject of much study [6, 58, 77, 80]. Management, innovation, and organizational literature assume that learning is stimulated by the need for organizational adjustment in response to some ill-defined stimuli [22]. This makes it particularly relevant to BPC, where the quest is to improve competitiveness and productivity in uncertain environments. The major goal of learning is to provide positive outcomes through effective adaptation to environmental changes and improved efficiency in the process of learning. Adaptation entails appropriate responses to technological changes and learning from other organizations that have achieved the best practices in the industry [28]. Increased efficiency in learning has been a primary focus of industrial economists who posit the notion of "learning by doing" [7] and accumulation of knowledge through cross-functional interfaces [1]. Declarative knowledge (i.e., bodies of organized information) facilitates learning in a collective fashion [14]. Such knowledge can be accumulated through the development of a knowledge base [65], a focus on core competencies [36, 84] that provide uniqueness to declarative knowledge, and technological/R&D development, which stimulates procedural knowledge [14]. Also, external information scanning can enhance the bounded rationality of individuals within the firm and provide key information on BPC. This may be carried out by technology gatekeepers [3], boundary spanners [66], or customers [92]. A qualitative description of learning may be based on Argyris and Schoen's [6] three-tier typology. Single-loop learning maintains stable relationships and works within existing norms, policies, and procedures, while double-loop learning challenges existing systems and their assumptions [55, 57]. Higher-level learning (deutero) occurs when members reflect on past learning experiences to learn and discover strategies for learning. Thus, higher-level learning affects the entire organization, develops understanding of causation and complex associations involving new actions, and is characterized by change in network relationships and decision making [26]. In sum, learning organizations are characterized by the ability to adapt
and improve, to build internal and external knowledge, and to achieve higher levels of learning that may be critical to successful BPC.

The key constructs that can be probed here are: adaptation (response to technology change, learning from others), improved efficiency (learning by doing), declarative knowledge (R&D resources and technology development, knowledge base, focus on core competencies), external information use (boundary spanners, technology gatekeepers, customers), learning type (double-loop, deuto).

Cultural Readiness

Organization culture facilitates (or inhibits) the integration of individual learning with organizational learning by influencing an organization’s ability to learn, share information, and make decisions [52]. The importance of organization culture is best understood in terms of cultural beliefs, values, and norms [52, 76]. Beliefs shape interpretations of information, while value systems relate behaviors across units and levels of the organization. Values often exhibit a propensity to resist change because of their shared nature [27]. Norms are the unwritten and socially transmitted guides to behavior. Norms that promote change include risk taking, openness, shared vision, respect and trust, high expectation for action, and a focus on quality [74]. Norms that discourage change include risk avoidance, ambivalence, group think, and excessive competition [74]. Leadership or change agents that can diagnose and influence cultural readiness for change may be a prerequisite for BPC [89]. Klempa [53] distinguishes between heterogeneous and homogeneous culture, where the former is more risk seeking and aggressive and the latter more cautious. Also, the potential to promote a common culture and innovative behavior can be enabled by open communications and information sharing. In sum, cultural readiness can be enabled by leadership or change agents, can open communication, and can define the risk-taking propensity in the firm.

The key constructs that can be probed here are: change agents and leadership, risk aversion (cautious, aggressive), and extent of open communications.

IT Leveragability and Knowledge-Sharing Capability

The sensing, collection, organization, communication, and use of information are critical to the knowledge-based organization [41, 59]. IT is an organizational resource, providing the necessary means to accomplish required knowledge processing and, thereby, inducing organizational change [32, 37, 48, 61]. Zuboff [96] calls the process of change caused by IT “informating,” with direct consequences on information flows, knowledge, culture, people, and tasks. Davenport [17] explains IT’s process impacts in terms of organization streamlining/simplification, capturing and distributing information, coordination, monitoring, analysis and decision making, and parallelism-enabling process change [17, 44]. The role of IT can be described in terms of the technological, organizational, and emergent imperatives depending on the extent to which IT is the dominant factor in BPC [61]. The emergent perspective suggests a
mutual, bidirectional relationship between IT and the organization, which is consistent with the sociotechnical change perspectives [13, 71]. However, communications technologies, particularly groupware, have received attention with respect to their direct effects on organizational structures and processes [25, 39, 40, 47, 49, 85]. These technologies can facilitate learning and knowledge development through a process of coordinated interaction among individuals. The ability to share knowledge enhances an organization’s proclivity to change [12, 73] as transparent data access empowers individuals and knowledge workers reinforce one another’s expertise. In sum, IT can play a varied role in business change; its communications infrastructure and the extent of knowledge sharing can create an environment facilitative of successful BPC.

The key constructs that can be probed here are: IT role (enabling, sociotechnical, dominant factor) and use of communications technology.

Network Relationships Balancing

Successful change processes often require the proactive leveraging of boundaries and relationships. This is typically the result of balancing internal and external networks in terms of the dialectic of cooperation and competition [12, 73]. The literature suggests that under most circumstances cooperative interpersonal and group behavior results in superior performance [45, 78]. However, research also indicates that a manageable level of conflict can enhance individual and group performance. For example, it is possible that competitive controversy within generally cooperative groups (e.g., interfuctional) can result in greater openness, knowledge, and understanding [88]. In terms of interorganizational processes, the literature indicates the benefits of “partnering” on a long-term cooperative basis with external suppliers (e.g., [16, 29, 34]). In sum, organizations that recognize the need to manage this competition and cooperation dialectic continuously have a greater propensity to benefit from employee incentives and controls as well as to instill change more effectively.

The key constructs that can be probed here are: interorganizational linkages and cross-functional cooperation (cooperative, competitive).

Change Management Practice

Change management involves effectively balancing forces in favor of a change over forces of resistance [81, 86]. Organizations, groups, or individuals will resist changes that are perceived as a threat to their frame of reference. Planned change can be conceptualized by Lewin’s [56] phased pattern of change involving unfreezing, moving, and refreezing. More recently, Beers [9] suggests that corporate transformations require a general dissatisfaction with the status quo by employees who have to change (i.e., a readiness to change), a vision of the future, and a well-managed change process. However, the degree of change has been subject to debate. Strassman [83], for instance, is a strong opponent of the visionary rhetoric and violent image of reengineering. He suggests that, to be effective, any way to improve the way people
work must be evolutionary, not revolutionary. Revolutionary and evolutionary change theorists have proposed a number of contrasting tactics for accomplishing change [82]. These tactics vary in the type of employee involvement, scope of communication for change, and the nature of leadership [38]. In general, direct confrontation of forces of resistance will probably only increase resistance capacities [64, 81]. In sum, change management involves countering resistance to change. It is often done in a phased manner, but the tactics used could vary depending on the scope of change required.

The key constructs that can be probed here are: pattern of change, management’s readiness to change (committed, participative, resistant), scope of change (improvement, radical change), managed change (alleviation of dissatisfaction; a vision for change; and a well-managed process of change, evolutionary or revolutionary change tactics use).

Process Management Practice

Process management (PM) has been defined as a set of concepts and practices aimed at better stewardship of business processes [19]. PM combines methodological approaches with human resource management [4, 30, 51] to improve the outcome of BPC. Various methods, typically adapted from industrial engineering, total quality, and IS practice, have been used in PM [51]. Critical in PM is the notion of process measurement and going beyond typical financial indicators to effectively collecting process information and metrics [20]. Further, improved feedback and auditing of the process, by tying it back to corporate objectives, is critical to achieving organizational effectiveness [85]. From the Japanese quality movement, PM has benefited from techniques (e.g., seven quality control tools [43]) to better manage and control manufacturing (less equivocal) processes, as well as from techniques (e.g., seven management and planning tools [70]) to represent concepts and relationships (e.g., affinity and relationship diagrams) for less controllable processes. Adapted methods for more radical/BPR include process visioning and idea-generation/creativity techniques [17, 37]; strategic linkage and process delineation [87]; process capture (e.g., IDEF0 [62]); customer requirements determination (e.g., Quality Function Deployment [2]); process modeling (e.g., IDEF, [62], Role Activity Diagramming [42], Event-Driven Modeling [21]); process simulation [91]; process rules specification and database design [5]); and process measurement (e.g., Customer Value Analysis [46]). Augmenting PM’s methodological approaches are a set of employee practices regarding individual and team work, including how work is designed [33] and levels of participation in decisions [13]. PM can supplement traditional sociotechnical perspectives by including quantitative process goals such as output, productivity, costs, and profit measures.

The key constructs that can be probed here are: process measurement (use of process metrics, process information capture, improvement feedback loop, audit), use of tools and techniques, and use of team-based structures.
Outcomes of BPC and Performance Gains

Outcomes of BPC can be measured at various levels. At the process level, continuous improvement and radical BPR can be placed along a continuum of change. Davenport [18, p. 7] suggests that both approaches share the same unit of analysis, require rigorous measurement of process performance such as quality, cycle time, costs, and ultimately customer satisfaction [37]. These can be benchmarked against expectations and actual performance—ultimately leading to bottom-line indicators such as profitability and market share improvement. More recently, however, many leading firms that undertake BPC to meet strategic goals recognize that they can only accomplish their objectives through people and, therefore, are placing employee quality of work life (QWL) issues paramount in their BPC expected outcomes. If human needs have been considered and change effectively managed, employees should experience improved working conditions in redesigned process tasks; this should increase employee job satisfaction and pride in work and strengthen their commitment to the organization [15]. Ultimately, this should make employees more productive in their jobs and better able to serve their customers. Embedded in the QWL concept are “Theory Y” assumptions that people “like” to work, “enjoy” challenging work, and are willing to “take responsibility” for work outcomes [63]. In sum, successful BPC can be characterized by process outcomes that exceed expectations, including customer satisfaction, and improved QWL.

The key constructs that can be probed here are: gaps between effectiveness expectations (goals) and actual performance improvements, QWL (employee satisfaction).

Methodology

We chose Embedded multiple case-study analysis to investigate the research questions concerning the broad and complex phenomenon of BPC [24, 95]. Embedded implies the use of multiple units of analysis: (1) the firm (business processes and strategy), (2) the BPC team, and (3) the BPC project. Also, since the focus was on studying antecedents to organizational performance, care was taken to include relatively homogeneous BPC initiatives with variance across cases on the outcome measure. This would enable “theoretical” replication with contradictory results in order to allow us to examine any differences that might exist in antecedents [94].

The selection criteria used were:

- The project should have been completed.
- It should involve a major BPC project with organizational implications.
- At some point the project should have had breakthrough performance expectations.
- The project should focus on cross-functional processes.
- Initial assessment of outcomes should be unambiguous.

To identify the sites, a secondary literature search was conducted to identify major BPC efforts. This initial search of BPC efforts identified over eighty firms. The next
stage was the soliciting of firms' interest in participating in the study. Of the ten firms that met the criteria, three made a commitment to participate in the study.

Data Gathering

Data-collection methods included a semistructured case protocol, a quantitative questionnaire, multiple documents and archival records, and telephone interviews. Such triangulation reduces bias and is recommended in case research [94]. Literature regarding BPC projects, including data on company performance, was studied prior to and after each set of interviews. This approach provided richness and depth and enhanced the construct validity of the study. Interviews provided the major source for primary data. Several case respondents provided the investigators with reports and memoranda directly related to the BPC project. These included an overview of the project, any consultant presentations, systems or business plans, and notes compiled by the team. Other sources included company public information such as 10K, letters to shareholders, and annual reports for the current year as well as for the period during which the BPC projects were conducted. Online searches yielded several articles regarding the project or various issues, plans, or financial conditions that would provide additional insight into the case profile.

In all cases the focal point for contact was a senior-level manager in the company who was directly responsible or integrally involved with the project from beginning to end. To eliminate any bias by a single respondent, attempts were made to ensure triangulation of data from multiple sources in the organization. Respondents with the following profiles were sought out and interviewed:

1. Senior management, process champion, and BPC team leader (to discuss strategy and process implementation, corporate culture, learning and effectiveness);
2. Functional associates (to discuss culture and change process and expectation gaps).

Most of the interviewees were either sponsors of the BPC or major team members who had a good, objective, and knowledgeable view of the project. Each interview was taped with the permission of the respondents. The nature and objective of the study were first explained to the respondent(s), who were also informed up front about expectations of involvement and the duration of the interview, as well as being reassured about issues of confidentiality. This was important since BPC tends to involve deviations from corporate strategy that firms are reluctant to release, especially to the competition. This provided a means to ensure integrity of the research and allowed the respondent to answer more openly and objectively.2

Each interview was conducted by using a standard case study protocol to ensure reliability [94]. The resultant protocol was based on the BPC management model described earlier and contained major constructs and probes. “How” and “why” questions were raised in an open-ended fashion. Responses were solicited in a semistructured manner.
Given the exploratory nature of the research, explanation building and pattern matching were used to provide evidence of links between constructs. The qualitative data also provided content and discovery of elements that surround each construct to identify those facilitating and inhibiting factors that lead to ultimate BPC goals.

Brief Background

The three cases studied were Paper Co., Comdisco Inc., and AT&T GBCS. All of these projects were complete at the time of the study's data gathering, which allowed investigators to gauge the gap between initial expectations and actual results. Each company had objectives of major breakthrough performance. However, upon completion, the actual measured performance ranged from poorer results (Paper Co.) to a very successful turnaround in corporate-wide performances (AT&T). For example, the AT&T case involved a business mandate and an expectation to overcome serious financial problems. Comdisco and Paper Co. intended to radically overhaul their IT infrastructure. While both of these cases were initiated with similar intentions, they eventually took different paths. Comdisco's objectives and methods evolved during the course of its project from a radical posture to a more continuous improvement project. Interestingly, this continuous improvement effort was determined to be moderately successful. Paper Co., on the other hand, marched forward toward a goal of radical overhaul of its IT processes but failed to meet expectations for major performance breakthroughs.

Paper Co. is one of the largest producers of paper, focusing primarily on the computer printing market in the United States. It is a decentralized organization with numerous geographically separated divisions. The company had developed independent information systems optimized for each division; however, on a corporate-wide basis they were little more than "islands of automation." Corporate management in Connecticut was extremely frustrated by the poor information access capabilities and, in 1988, ventured into BPC to improve knowledge transfer across multiple divisions. The company initiated the effort proactively and had "revolutionary" expectations of results. The initial IT focus and leadership, however, proved inappropriate, and the project began to involve other functional management and to gravitate toward a business focus. The effort, however, continued to suffer from resistance from functional management, who opposed drastic alteration of their operations for process-wide optimization. Although the project had some success in improving information access, overall the extent of BPC success was considered low due to its inability to effect improvements in the bottom line of the firm.

Comdisco Inc. is a $2.21 billion computer leasing and asset management firm, well known for its disaster recovery services. In 1991, the company launched a BPC effort as a reaction against escalating costs, stagnant stock prices, flat revenues, excessive cycle time, and poor customer service. Initially, the project focused on IT but soon the BPC teams learned from their mistake and gravitated toward a business focus. Eventually, Comdisco underwent several continuous improvement BPC efforts to improve these operational metrics. The company did realize several benefits from the
BPC effort while experiencing some setbacks in other areas. Overall, its effort can be classified a moderate success in BPC implementation.

AT&T GBCS, a division of AT&T Co. (now Lucent Corp.), is a major manufacturer of PBX switches. In 1988, GBCS faced grave financial conditions, dwindling market share, low customer and employee satisfaction, and lengthy cycle time. A top-down mandated BPC initiative mobilized the entire company to participate in a major process redesign effort that was facilitated by competent consultants and state-of-the-art BPC methodologies and techniques. This radical process redesign led to a successful $250 million turnaround with six consecutive profitable quarters (for the first time in GBCS history). GBCS boasts one of the best customer and employee satisfaction ratings in the industry, and payment collections within 0–90 days jumped from 25 percent to 70 percent.

Research Findings

This section covers each construct of the research model with summative findings for each case. Whenever appropriate, respondents’ statements are quoted to illustrate the construct. Consistent with the research objectives, specific probes were made concerning each construct. The tables in each subsection summarize interpretation of the data gathered for each construct. In addition, any construct that had a positive or negative influence on conducting BPC, or on overall BPC effectiveness, was documented with either a plus (+) or a minus (−) sign. These positive or negative influences were identified and cross-validated either through direct statements by the respondents during the interview or from other data sources. Those with significant impact on the project success are in bold type. In some instances, a +/- is used to denote both positive and negative influences of the construct on project outcome.

Strategic Initiative (Table 1)

Stimuli

Two of the BPC projects were strategically very reactive, with AT&T in a “do or die” situation and Comdisco reacting to the price pressures and customer service problems. Paper Co., in contrast, wanted to maintain industry leadership with innovative IT solutions and started its BPC project as a strategically proactive initiative.

AT&T GBCS had the most severe financial condition prior to BPC, which was a primary stimulus to initiate major changes. As the respondent explained, “The climate was such that it was very difficult to maintain market share, GBCS had a lot of competition. Customer satisfaction ratings were not what we wanted them to be. And the profitability of our large PBX business was in worse shape than it had ever been. There was literally no profitability to be had in that market. We were losing a tremendous amount of money.” Operating costs had been steadily rising and margin steadily declining, but the biggest areas of concern was profitability and customer satisfaction.
Table 1. Summary of Strategic Initiative Results

<table>
<thead>
<tr>
<th>Construct</th>
<th>Comdisco evidence</th>
<th>AT&amp;T evidence</th>
<th>Paper Co. evidence</th>
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<td><strong>Stimuli</strong></td>
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<tr>
<td>Proactive</td>
<td>Reactive</td>
<td>Reactive</td>
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<td>Reactive</td>
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<td><strong>Formulation scope</strong></td>
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<tr>
<td>Incremental</td>
<td>+ Eventually</td>
<td>Revolutionary</td>
<td>+/- Revolutionary</td>
</tr>
<tr>
<td>Revolutionary</td>
<td>became incremental</td>
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<tr>
<td><strong>Decision making</strong></td>
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<tr>
<td>Autocratic</td>
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<td>Autocratic</td>
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<td>Bureaucratic</td>
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<td><strong>Strategy led</strong></td>
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<tr>
<td>Onset</td>
<td>Eventually</td>
<td>+ Onset</td>
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Comdisco, also classified as "reactive," had several external stimuli to undertake BPC. These can be listed as: "competitive intensity—price pressure . . . cost escalation not in sync with revenue growth . . . inordinate cycle time [for service delivery] . . . inefficient staffing and too many hierarchical layers [and a] new transaction processing paradigm." Reacting to these problems, the company initiated the BPC effort in an attempt to radically improve performance.

Unlike the other two cases, Paper Co. was proactive in its BPC effort. As a market share leader and in strong financial condition, the company was looking for BPC opportunities to improve operational efficiencies and strengthen its market position even further. The BPC initiative began as an IT overhaul effort due to the frustration expressed by senior management in accessing information from its information systems. Paper Co. had different computers, operating systems, and programming languages at every location. Senior executives' frustration was evident. One IS executive indicated that "when they asked for something, it would have to be collected from many systems. If it was a one-time thing, we did not bother to write interfaces. We collected key data in one location."

An interesting finding is that, in Comdisco and Paper Co., the project was initiated by the IS group. However, there was not significant buy-in from the entire organization, and the resulting success was moderate and lower. AT&T, on the other hand, had significant stimuli from all functions and the project was led by the CEO. This "sense of urgency" stimulus resulted in corporate-wide buy-in and propelled the entire organization to change for success. As AT&T achieved the highest level of success among the three cases, this might suggest that, to be successful, a BPC project aimed...
at changing the performance of the firm cannot be led by IT alone and that IT innovations must be backed by a sense of urgency in other business functions in the organization.

Formulation Scope

AT&T formulated and maintained a strategy of revolutionary change from the start. Both Comdisco and Paper Co. started with a grand scheme to redesign their IT infrastructure to improve organizational performance, but, in the case of the former, because of risk aversion and cultural issues, Comdisco was unable to launch a major revolutionary effort. Instead, the firm achieved several smaller successes through process improvements. Respondents at Comdisco stated that adoption of the continuous improvement approach by the BPC team was a positive influence on their project. Paper Co., on the other hand, had a combination of positive and negative views on its revolutionary scope because it did appreciate the value of a business-focused linkage to IT change, but was unable to fulfill the potential of this revolutionary change due to a lack of change vision and cultural obstacles.

Decision Making

Of the three cases, AT&T was the only autocratic and mandated initiative. In contrast, a local functional team within Comdisco and Paper Co. started the BPC effort, elevated it to the corporate level, and eventually received a bureaucratic consensus to proceed as a corporate-level initiative. In all three cases, a BPC champion emerged or was appointed to spearhead the project. Although not mentioned as a positive influence by the interviewees, the emergence of a champion is considered critical to BPC success [17, 37].

Strategy Led

Because of its focus on incremental improvements, Comdisco did not initially devise a corporate strategic plan that tied in with the BPC efforts. Over time, however, the considerable success from these improvement efforts caught senior executives’ attention and they eventually included BPC as an integral part of the business and strategic plans. The BPC efforts at AT&T were led by strategy from the top down. The fact that AT&T made the BPC effort central to its strategic goals at the onset and measured organizational success throughout the change efforts was repeatedly cited by interviewees as a major facilitator of success. In the case of Paper Co., the effort was also strategy led at the onset, but the strategy had more to do with IT planning than with corporate-wide business planning.

Learning Capacity (Table 2)

The research model provides a framework in understanding an organization’s capability to learn in its quest to successfully change business processes. Almost all cases
Table 2. Learning Capacity

<table>
<thead>
<tr>
<th>Construct</th>
<th>Comdisco evidence</th>
<th>AT&amp;T evidence</th>
<th>Paper Co. evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response to technology change</td>
<td>Learning from others</td>
<td>Response to technology change</td>
<td>Response to technology change</td>
</tr>
<tr>
<td>Learning from others</td>
<td>Learning from others + Learning from others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved efficiency</td>
<td>Learning by doing</td>
<td>Learning by doing</td>
<td>Learning by doing</td>
</tr>
<tr>
<td>Declarative knowledge</td>
<td>R&amp;D resources and technology development</td>
<td>Knowledge base</td>
<td>Knowledge base</td>
</tr>
<tr>
<td>Focus on core competencies</td>
<td>Knowledge base</td>
<td>Knowledge base</td>
<td>Knowledge base</td>
</tr>
<tr>
<td>External information use</td>
<td>Boundary spanners</td>
<td>+ Boundary spanners</td>
<td>+ Boundary spanners</td>
</tr>
<tr>
<td>Technology gatekeepers</td>
<td>Technology gatekeepers</td>
<td>Technology gatekeepers</td>
<td>+ Technology gatekeepers</td>
</tr>
<tr>
<td>Customers</td>
<td>Customers</td>
<td>Customers</td>
<td>Customers</td>
</tr>
<tr>
<td>Learning Type</td>
<td>Deutero</td>
<td>Deutero</td>
<td>Deutero + Insufficient deutero learning</td>
</tr>
</tbody>
</table>

showed some propensity to create a learning environment. Key patterns observed included:

- Learning from others (each firm had an understanding of best in class vendors);
- Learning by doing (learn from mistakes and successes);
- Use of external experts and "voice of the customer" to understand process requirements.

Adaptation

While “response to technology change” played a role in the initial IT-focused effort at Comdisco and Paper Co., the “learning from others” adaptation mechanism at AT&T pushed for best-in-class benchmarking practice. Other indicators of this probe include AT&T’s adherence to its adapted PQMI process management methodology and its overall continuous learning philosophy. Respondents strongly endorsed benchmarking (learning from others) as a positive influence on BPC success, as it helped them set goals and measure their achievements continuously in the quest to becoming a world-class organization with respect to customer satisfaction, employee satisfaction, and cycle time.
Improved Efficiency

All but Paper Co. had a tendency to improve learning efficiency through “learning by doing.” On the advice of consultants, Paper Co. executives eventually saw that their IT-driven approach was somewhat misguided, but the overall level of learning by doing remained insufficient and was regarded as a source of negative influence on their final project outcome. Their BPC team observed that this deficiency was a result of constant resistance from functional managers who refused to adopt major change recommendations. The consultants repeatedly recommended that senior officials coerce these managers into adopting major changes, but to no avail. In contrast, both AT&T and Comdisco showed the ability to learn through the process. The Comdisco team was able to convince various functional managers who were initially resistant to BPC to adopt the BPC philosophy once they saw successes in smaller projects. The company began to adopt a process-focused orientation based on this experience. Also, the immediate retreat from an IT-focused change effort was a clear indicator that Comdisco had been very efficient in its organizational learning process.

Declarative Knowledge

To stay competitive, all three firms understood the value of competing with superior expertise and of developing a cumulative knowledge base. Comdisco’s effort in this area directly touches upon its core competencies—superior customer service and expertise in disaster recovery. The BPC efforts, aided by IT-enabled cross-functional information sharing, were specifically designed to keep improving and enhancing this core competency. We saw a clear pattern of efforts to enrich the knowledge base for the purpose of better understanding the customer. As a result, the knowledge worker in Comdisco was expected to become more of a generalist than a functional expert. This focus on core competency was not seen in the other two cases. Paper Co., means of improving declarative knowledge to enhance operational efficiencies.

External Information Use

One clear pattern that emerged from the three cases was the value of external information use in enhancing learning capacity. All three companies had many technology gatekeepers who scanned the environment for new developments and opportunities. In the case of Paper Co., technology gatekeeping resulted in the significant introduction of systems that improved information access throughout several divisions of the company. All three companies also made good use of customer surveys to assess gaps in customer service. At Comdisco, for example, customer surveys helped the company measure the degree of success or satisfaction with current and new processes. These surveys also provided an audit trail of its improvement effort and a linkage to the firm’s overall performance. The most beneficial source of external information in all three cases, however, came from consultants, who acted as “boundary spanners.” A large consulting company was retained by AT&T to conduct
in-depth case studies on twenty-four processes and identified problem areas. This proved to be a major facilitator to BPC success, as it set the stage for understanding the degree of problems with the current process and helping them to develop goals for improvement. These surveys and case studies were used to measure performance after completion of the project to show net realized benefits. These consultants were integral to the BPC teams and assisted in multiple functional areas such as systems development and strategic positioning. The company also recruited AT&T QUEST, the AT&T quality consulting organization, to make sure it followed the PQMI methodology. Paper Co.’s use of consultants was also important, as their recommendations led the firm (unfortunately too late and half-heartedly) to move away from an IT-centric endeavor toward a business-focused BPC effort.

Learning Type

Interestingly, the two more successful projects—Comdisco and AT&T—had a deutero-loop type of learning and were willing to adopt a strategy for learning based on past failures. Comdisco understood its multimillion-dollar mistake in attempting a grand-scale IT-led change initiative without a business focus, and it altered its course accordingly. The following quotation demonstrates this deutero pattern of learning: “We spent a lot of money on new technology and the people and consultants on the IT side and reengineer through technology. . . . we should have held off, until the business side had truly reengineered. And then we could have come in with IT to further reengineer. So that was what I consider a big lesson.” For Paper Co., there were no major learning-type indicators. The company had a very traditional management style and did not adapt and change strategies for learning based on lessons learned. This was in fact deemed a major inhibitor to success by the interviewees, as the firm failed to implement changes as it had envisioned.

Cultural Readiness (Table 3)

Each case differed in its cultural systems. Comdisco and Paper Co. had more traditional rigid functional hierarchies, and the BPC project encountered several pockets of resistance even though senior managers in both companies were enthusiastic and supportive of change.

Change Agents and Leadership

According to Mintzberg and Westley [69], a “visionary leader” is a single leader who influences change. In the cases we studied, however, change did not come from a single visionary leader but may be the collective result from a team of change agents (e.g., a BPC team) or in many cases appointed BPC champions. This power of visionary leadership in the form of self-directed teams may be a manifestation of the organization’s cultural potency [75], which is a summative index of the power of the organization’s cultural paradigm to initiate change. For both Comdisco and AT&T,
Table 3. Summary of Cultural Readiness Results

<table>
<thead>
<tr>
<th>Construct</th>
<th>Comdisco evidence</th>
<th>AT&amp;T evidence</th>
<th>Paper Co. evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change agents and leadership</td>
<td>+ Change agents</td>
<td>Change agents</td>
<td>+/- Sr. mgt. mgt. commitment</td>
</tr>
<tr>
<td></td>
<td>Sr. mgt. commitment</td>
<td>+ Sr. mgt. commitment</td>
<td></td>
</tr>
<tr>
<td>Risk aversion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cautious</td>
<td>+ Cautious</td>
<td>Aggressive</td>
<td>- Aggressive</td>
</tr>
<tr>
<td>Aggressor</td>
<td>+ Medium</td>
<td>+ High</td>
<td>- Low</td>
</tr>
<tr>
<td>Open communications</td>
<td>Not assessed</td>
<td>Not assessed</td>
<td>- Low</td>
</tr>
<tr>
<td>Cross-training</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

there was a high level of cultural potency in the company to change beliefs, value systems, and norms. In the Comdisco case, the vision and influence to change culture came primarily from change agents, namely, from the BPC team, even though a senior management champion was appointed. AT&T had a true “top-down” vision of change from senior management, and the entire corporation responded. A facilitator in Paper Co. was also senior management’s enthusiasm for change and the leadership they provided in setting the direction. But this was neutralized by a lack of change agents and leadership from middle management, which slowed down the momentum for change.

Risk Aversion

With respect to risk aversion, Comdisco was seen as more “cautious” than AT&T and Paper Co., which resulted in incremental but successful process improvements. The BPC effort at Comdisco followed a very pragmatic approach to rationalize the need for change. There was not a mandate from senior management and, in fact, emphasis was placed on participation and giving credit whenever such recognition is justified. The BPC team took a low profile and achieved consensus by involving senior management and educating the functional areas about why change is needed, as evident from the following dialogue: “We don’t come out there and beat our chest and say ‘we just reengineered this other process and saved the company $6 million,’ absolutely no way. We take a very low profile, work with the senior management and it becomes management sponsored, it becomes their idea, because then they feel part of it when the savings come.”

AT&T definitely took a more aggressive stance to change; this can be attributed to the grave financial situation under which it was operating. Responding to the mandate from the corporate office, the culture in AT&T was conducive to aggressive risk taking to maximize return. Paper Co. also adopted a proactive stance to change and boldly attempted to overhaul its IT infrastructure. This, however, turned out to be detrimental and was considered an inhibiting factor to its success,
as the aggressive tactics blinded it to the overall business impact of the proposed changes.

Open Communications

In all cases, senior management participated in “town hall” type meetings soliciting input as well as providing clear directions and vision. AT&T in particular scored very highly in this dimension as the organization believed in full disclosure and open communications. The teams consisted of cross-functional members who openly discussed the process tasks (non-value-adding activities) and identified areas for improvement. They presented results to the executive council, who then communicated the decisions to all division vice presidents. The organization in general valued open communications, which eventually became one of the value statements of the organization called the “common bond.” The common bond consists of organizational principles by which AT&T associates are expected to abide and live in the workplace. GBCS also measured associate satisfaction as a part of overall organizational performance and process success. The “common bond” and the use of AT&T PQMI continuous process improvement methodology provided an institutionalized process that fostered a culture for adapting to change.

In Comdisco and Paper Co., the CEO sat in on the brainstorming sessions and prompted the teams for major change ideas. However, the level of open communication was not seen in lower functional levels, primarily because of the more rigid organizational structures. Comdisco, however, did communicate that the BPC project should also benefit employees, and this engendered some sense of open informal communication. Paper Co., on the other hand, had a very traditional and hierarchical management structure and was not strong in “open communications,” particularly in the earlier stages of the change effort. A related manifestation of this was the fact that top management was supportive of change but middle management was not. Open communication improved somewhat at Paper Co. after quality training was conducted in all divisions as a part of the BPC effort. This candid observation was provided by one Paper Co. respondent during an interview: “We are now putting everybody at this plant through training and trying to break down barriers, open things up, push decision making down as low as we can. We are starting to do all that now, but we were not doing that then.” Overall, weak communication was cited as an inhibitor to success at Paper Co. A general pattern that clearly emerged from all three cases is the tremendous influence of open communication on BPC success. To succeed, senior management must continuously communicate the importance of the BPC effort and how it would affect the organization.

Cross-Training

A factor that may have limited Paper Co.’s success is the lack of cross-training and personnel movement within the organization. Paper Co. typically employed people in the same function for many years, which made it more difficult for the firm to adapt
Table 4. Summary of IT Leveragability and Knowledge-Sharing Capability Results

<table>
<thead>
<tr>
<th>Construct</th>
<th>Comdisco evidence</th>
<th>AT&amp;T evidence</th>
<th>Paper Co. evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT role</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enabling</td>
<td>- Enabling</td>
<td>+ Enabling</td>
<td>- Dominant factor</td>
</tr>
<tr>
<td>Sociotechnical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominant factor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of communications technology</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
</tr>
</tbody>
</table>

...to a cross-functional form. The lack of cross-training was one reason why there was no upward movement of Paper Co. employees to top executive positions. Because this was a "new" construct identified during the Paper Co. case study, no information on this was gathered from earlier studies at AT&T and Comdisco.

IT Leveragability and Knowledge-Sharing Capacity (Table 4)

IT Role and Extent of Knowledge Sharing

Respondents in all three cases unanimously agreed that BPC needs to adopt a sociotechnical design approach. Comdisco and Paper Co. learned the hard way when they approached BPC with an IT-only view and reverted back to a more sociotechnical design orientation. However, each case demonstrated the value of IT in improving:

- Information and knowledge sharing across functions;
- Consistency of information and service across functions;
- Communications between functions that could lead to associate satisfaction and employee productivity improvements, especially with the use of communications technology.

One pattern that emerges from the Paper Co. and Comdisco cases is that IT-led projects, which often fail to capture the full business and human dimensions of processes, are less likely to succeed. This was demonstrated by Markus and Keil [60] in their description of a large-scale change management project that failed for reasons unrelated to technical feasibility and reliability. Benjamin and Levinson’s [10] study also confirmed the importance of relying on appropriate implementation and change management techniques to ensure project success.

Use of Communications Technology

Communications technology was not seen as a major IT enabler in these cases but as more of an organizational efficiency enabler. In the Paper Co. case, the use of e-mail, which did not exist before, provided better cross-divisional communications. How-
Table 5. Summary of Network Relationship Results

<table>
<thead>
<tr>
<th>Construct</th>
<th>Comdisco evidence</th>
<th>AT&amp;T evidence</th>
<th>Paper Co. evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interorganizational linkages</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Cross-functional cooperation</td>
<td>Cooperate</td>
<td>Cooperate</td>
<td>++/-- Cooperate</td>
</tr>
<tr>
<td></td>
<td>-- Cooperate</td>
<td></td>
<td>Competitive</td>
</tr>
</tbody>
</table>

ever, this was not considered a major technology enabler to achieve the breakthrough successes of BPC. This may be related to the nature of the projects where process automation was not a major focus in the BPC effort.

Network Relationships (Table 5)

Interorganizational Linkages

None of the cases had any evidence of interorganizational process linkages. However, Paper Co. did express an interest as an ultimate objective in tying customers into its process with common ordering systems.

Cross-Functional Cooperation

Respondents at Comdisco and Paper Co. indicated high levels of cooperation among the cross-functional members of the BPC team. Cooperation between functions was a different story. At Comdisco, a negative influence was the considerable competition between functions that showed up as these functions were being integrated into a single process. Both Comdisco and Paper Co. had several pockets of resistance by functional managers during the design phases. Paper Co. was a mixed bag: There was a lot of enthusiasm at the brainstorming sessions between functions but severe resistance by functional managers to the proposed radical change. Several line managers went so far as to comment: “What do these process teams know about our jobs? We have been doing this for ten years and now they want to change how we work!” This level of resistance can be very detrimental to the BPC success in that the resulting process redesign may become less innovative. For Paper Co., the “cooperative” construct received a +/-- mark because the company did see increased communications volume and increased synergy between the functions once the process was implemented.

For the cross-functional cooperation construct, we saw nearly total cooperation at the AT&T site. It came as no surprise that it emphatically regarded this as greatly facilitative to project success. This may have been the result of the mandate placed on the entire corporation to change.
Table 6. Summary of Change Management Results

<table>
<thead>
<tr>
<th>Construct</th>
<th>Comdisco evidence</th>
<th>AT&amp;T evidence</th>
<th>Paper Co. evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern of change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semiformal process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal phased process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management's readiness to change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Committed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participative</td>
<td>+/- Participative</td>
<td>+ Committed</td>
<td>+/- Participative</td>
</tr>
<tr>
<td>Resistant</td>
<td>Resistant</td>
<td>Resistant</td>
<td></td>
</tr>
<tr>
<td>Scope of change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radical change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managed change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alleviate employee dissatisfaction</td>
<td>Yes</td>
<td>+/− Overall</td>
<td>– Overall</td>
</tr>
<tr>
<td>Vision for change</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Well-managed process of change</td>
<td>Semiformal</td>
<td>Formal</td>
<td>None</td>
</tr>
<tr>
<td>Evolutionary or revolutionary change tactics</td>
<td>Evolutionary</td>
<td>Revolutionary</td>
<td>Revolutionary</td>
</tr>
</tbody>
</table>

Change Management (Table 6)

Pattern of Change

While Paper Co. and Comdisco showed little or no formality in their process of change, AT&T followed a structured methodology, and we could see a pattern of changes in phases. In all three cases, however, there was no clear evidence for change phases as outlined by Lewin [56]. For Paper Co. and Comdisco, this is not at all surprising since both projects were initially led by the IS group and no formal methodology for process change was employed. This may be a major reason Paper Co. never saw the radical changes it expected. AT&T experienced less resistance, and we believe that disciplined approach to change management contributed to its success.

Management's Readiness to Change

In all three cases there was a clear pattern that senior management was supportive of the projects. AT&T had full commitment from all levels of management. At Comdisco there was participative support from senior management. However, at the middle-management level, where the impact of the proposed changes was to be felt, there was initial reluctance to adopt the changes. The team had to quantify the benefits to remove
the emotional side of the resistance. This was indicated by the following comment from a respondent: "Because it was a measure of dollars and cents it was less of an emotional issue. People saw this map of all those [expletive] awful flows all over the place and bullet points which mean wait times; visually it looked ridiculous."

Paper Co.'s condition was similar to that of Comdisco, with high-level participation but significant resistance by middle-level management. This indicates that, for BPC efforts to succeed, senior management readiness for change is a necessary but not sufficient condition for success. In addition, it is important that all levels of the organization exhibit readiness for change. Lacking this, a BPC project would experience great difficulty in change management and results are likely to fall short of expectations.

Scope of Change

The scope of BPC projects at Paper Co. and AT&T created radical expectations for improved performance. At Paper Co., high performance payoffs were expected but significant organizational changes were not envisioned, and the project focused primarily on IT changes. AT&T, however, was prepared to make any organizational changes that were necessary to optimize performance. As for Comdisco, one saw a clear case of gradual improvement, as the company was not prepared to make any major radical changes to the organization and the team quickly found out that the best way to succeed was to recommend more incremental changes that management would support. Credibility established with these small successes eventually paved the way for larger-scale changes.

Managed Change

Management at AT&T made every effort to ensure that employee satisfaction was considered when making changes, and there was a clear commitment to initiate changes that could alleviate employee dissatisfaction. AT&T executives attempted to search all corners of the organization for change opportunities. One senior executive articulated a "vision for change" that provided a high-level roadmap where we wanted the organization to go." The process of change, however, was well managed with the aid of a formal methodology. As a part of this managed process, for example, the BPC teams were to sit with all the functional associates affected by the changes, who were provided with an explanation of what the changes meant for their current roles and responsibilities. To succeed at revolutionary changes, AT&T also attempted revolutionary change tactics. For example, middle and lower management were forcefully instructed to carry out whatever steps were needed to achieve the radical high-level BPC goals laid out by senior management.

In addition to the many positive attributes, as described above, the managed change at AT&T was also seen as having some negative influence on success also. The respondents acknowledged one major problem in their change management process that they could improve. Because of the lack of a well-defined rollout program, certain
functions in the newly designed process were being updated earlier than others. But, since the new process required cross-functional knowledge sharing, this lack of synchronized implementation caused considerable delays.

As at AT&T, the Comdisco BPC team also sought change opportunities that alleviate employee dissatisfaction. In fact, the CEO attended BPC brainstorming sessions dedicated to this purpose. An evolutionary sociotechnical change approach, which was not fully planned, was evident at Comdisco. As described by one respondent, “It takes three months of really hard work and three months of just hand holding. . . . they appreciate the three months of hand holding.”

Paper Co. showed no indication that it took steps to remove employee dissatisfaction. Senior management did provide a vision for change, but employees were generally excluded from participating in the process redesign. Overall, management of the change process was problematic, and many desired radical changes were never implemented because of the constant resistance from functional managers, who had been entrenched in the old processes for more than twenty or even thirty years. The consultants had recommended the use of an external party, called a “challenger,” to constantly push the team for more radical changes. The company, however, did not deploy any such unbiased person to break the current frame of mind. Failure to do this was considered an inhibitor to success, as one respondent lamented: “Yeah, we all saw it could be done but we couldn’t . . . and that’s one of our weak points.”

Process Management (Table 7)

Process Measurement and Tools and Techniques

AT&T was by far the most sophisticated of the three cases in process management. The company’s long experience in the quality movement and the development of their own process management methodology (PQMI) helped place them in this leadership category. AT&T uses process mapping and diagnosis techniques to study the “as-is” process as well as measurements of process performance using quality techniques. Process documentation was done through process flow chart analysis and quality techniques like fishbone and root cause analysis. A major facilitator of success at AT&T was its use of process metrics that quantified the process value and goal expectations.

Comdisco also used formal techniques successfully for process analysis and design. In fact, one of the cited success factors at Comdisco was the team’s ability to measure changed processes and to articulate their value to management and functional groups. Comdisco used process metrics as a tool to convince functional managers who were reluctant to undergo BPC. “We started to measure cycle time. And then we communicated that . . . we broke the process down into dollars and cents to take the emotion away. And then, I think, people were more willing to sit down and listen. . . . the metrics allowed the team to objectively persuade the value of the initiative.”

At Paper Co., techniques and methods such as DFD, CASE tools, and simulation
Table 7. Summary of Process Management Results

<table>
<thead>
<tr>
<th>Construct</th>
<th>Comdisco evidence</th>
<th>AT&amp;T evidence</th>
<th>Paper Co. evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process measurement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of process metrics</td>
<td>+ Process metrics</td>
<td>+ Process metrics</td>
<td>- Audit of IS metrics</td>
</tr>
<tr>
<td>Process information capture</td>
<td>Process information capture</td>
<td>Process information capture</td>
<td></td>
</tr>
<tr>
<td>Improvement feedback loop</td>
<td>Improvement feedback loop</td>
<td>Improvement feedback loop</td>
<td></td>
</tr>
<tr>
<td>Audit</td>
<td>Audit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tools and techniques</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Team based</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

were used for process analysis and design. These, however, are used mostly for information systems development and did not serve the purpose of BPC well. Further, quality tools were not utilized. As a result, there was a lack of process metrics and process information capture for the business process. The biased focus on IS processes did produce audit trails for IS metrics, but this was later viewed as misguided and an inhibitor to success.

Team Basis

All of the cases used teams extensively in the BPC project as well as in the organizational design of the new processes. At Comdisco, the BPC teams were cross-functional and the new processes also used team-based structures. When the BPC project began, AT&T had already begun to implement more horizontal organizational structures. One of the problems identified within AT&T was too many management layers, with vice presidents all over the organization. The BPC teams sought to tie different functions together and at the same time reduce the number of layers. The BPC teams at Paper Co. did not succeed in implementing major changes to the company’s rigid organizational structure, but they did use teams during the redesign effort.

Outcomes of BPC and Performance Gains

BPC outcomes or performance gains were assessed to validate the research model claim that a successful BPC initiative should see improvements in “Process Performance” and “Quality of Work Life” (QWL) [50]. Semistructured interviews were used to derive primary information on outcomes for each project. Respondents were asked to state their expectations of project achievements. To separate “stated goals” from “actual goals” (in an attempt to remove possible bias of only stating goals that were actually achieved), probes were used to reveal all goals. Actual performance gains were determined through multiple sources such as statements from the respondents with supporting quantified data, documented performance results, and external...
Table 8. Summary of Outcomes and Performance

<table>
<thead>
<tr>
<th>Construct</th>
<th>Comdisco evidence</th>
<th>AT&amp;T evidence</th>
<th>Paper Co. evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process performance</td>
<td>(A) Cycle time (87 days to 2)</td>
<td>(A) Cycle time (52 weeks to 5 days)</td>
<td>(B) Information access</td>
</tr>
<tr>
<td>improvements</td>
<td>(B) Processing cost ($6,000 to $300-500; 8 layers to 2)</td>
<td>(A) Customer satisfaction (25% to 70%)</td>
<td>(C) Customer satisfaction*</td>
</tr>
<tr>
<td></td>
<td>(B) Quality</td>
<td>(B) Relevance/market share ($250m turnaround)</td>
<td>(C) Reduce operations cost</td>
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<tr>
<td></td>
<td>(C) Customer satisfaction</td>
<td></td>
<td>(D) Profitability/market share</td>
</tr>
<tr>
<td>Quality of work life</td>
<td>Medium employee satisfaction</td>
<td>High employee satisfaction</td>
<td>Low/medium employee satisfaction</td>
</tr>
<tr>
<td>improvements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall results</td>
<td>Moderate</td>
<td>Higher</td>
<td>Lower</td>
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</tbody>
</table>

Legend: A = exceeded goal; B = met goal; C = marginal improvements but did not meet goal; D = no success.
* Paper Co. referred to customer satisfaction as customer service.

sources of information such as financial reports (10K, press releases, etc.). Project expectations were compared against actual results for all goals (e.g., cycle time, profitability, market share, quality, cost, QWL) to see if actual performance met expected goals as understood at the onset of the project (see Table 8).

In all the cases there was an expectation of improving operational efficiencies, whether cycle time reductions or processing/operational cost reductions. In addition, all companies expected to see gains in customer satisfaction. Comdisco had specific expectations for service quality increases, while AT&T and Paper Co. looked for drastic improvements in profitability and market share growth. In fact, at AT&T GBCS, the BPC project did result in dramatic performance benefits. AT&T continuously compared targeted with actual process performance and found that it was exceeding its expectations for cycle time (A) and customer satisfaction (A) improvements. For example, AT&T GBCS had a poor pre-BPC project customer satisfaction rating of 25 percent (meaning only 25 percent were fully satisfied with their product/service). However, their post-BPC customers satisfaction rating was 75 percent, exceeding its expected goal. In terms of financial performance, AT&T set high performance expectations that were met with six positive financial quarters. AT&T’s BPC project was attributed with “bringing . . . a solid P&L statement” and determined by management as meeting (B) their lofty financial expectations “by turning the company to the black.”

Comdisco met or exceeded performance improvements in the areas of cost reduction (B) and cycle time reduction (A). Their order-processing time went from eighty-seven days to two days, and significant reductions in time were seen in the accounts-receivable process. While Comdisco’s processing costs were slashed from $6,000 per order to a range of $300–500 per order, pre-BPC project expectations that this could be accomplished were high, therefore, this only received a “meets” (B) expectation
rating. Continuous process improvements permitted a gradual reduction in qualify voids (B), allowing eventual attainment of this goal. Reports of perceived customer satisfaction improvements were mixed. Comdisco was unable to provide any measurable proof that customer satisfaction increased and, thus, was ranked as only marginally meeting this goal (C).

Paper Co. had high hopes that reengineering would add significantly to its bottom line, extending its relative competitive strength in its industry. In reality, the project’s primary focus on IT changes alone saw only significant improvements in information access (B) among its divisions. While end users had better access to information, it was generally held that the high expectations for improvement in customer service (C) and cost reductions (C) went virtually unanswered. In terms of actual financial performance of Paper Co., there was no indication of any bottom-line improvements or market share growth. For example, during the period of the BPC project at Paper Co. (1988–91), net income dropped from $164 million to $45 million and revenue dropped from $1.33 billion to $1.19 billion. The project’s inability to achieve unrealistically high expectations for substantial financial benefits was the principal reason the overall project was not seen as a success (D). Ironically, while Paper Co. initiated its project in a proactive manner (during a period when the company was in a fairly strong competitive position), by the end of the BPC project the company was experiencing unanticipated financial pressures.

While preproject expectation levels for quality of work life improvements resulting from the BPC projects were not as explicitly stated as were process performance improvements, employee satisfaction metrics were monitored during the course of each project. In the case of AT&T, its concerted effort to achieve “associate satisfaction” through “the Common Bond” paid off with a postproject measure of employee satisfaction at one of the highest levels in its industry. Comdisco also made modest strides in QWL through team- and quality-based changes. Although not consciously intended, Paper Co. also experienced some minor gains in employee satisfaction within the divisions affected by the BPC project. These improvements may be partially explained by a limited “Hawthorne effect” that occurs as a result of conducting a BPC project. Specifically, increased attention placed on employees and the solicitation of their opinions may result in more of a sense of involvement in the organization and modestly increase their employee satisfaction.

Implications

OVERALL, THE RESULTS FROM THE THREE CASE STUDIES demonstrated that constructs capturing dimensions of the BPC management model provide a framework for studying business process change. In addition, this research indicates that certain constructs in the model had more impact on the outcome of projects than others. These were primarily due to the change environment within which BPC is to occur. Table 9 offers, under each of the BPC framework’s major concepts, a synopsis of significant constructs and the context in which they were viewed as either facilitators or inhibitors of each case’s outcome.
<table>
<thead>
<tr>
<th>Case</th>
<th>Strategic initiative</th>
<th>Learning capacity</th>
<th>Cultural readiness</th>
<th>IT &amp; knowledge sharing</th>
<th>Network relationships balancing</th>
<th>Change management practice</th>
<th>Process management practice</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T</td>
<td>+ top down, strategy led from onset</td>
<td>+ adaptation of best in class benchmarks. + heavy use of external information including consultants; exploited boundary spanning internal expertise and techniques, including PQMI methodology.</td>
<td>+ change agent leadership from top pushed for cultural reform of corporate beliefs and values. + push for an extremely open environment—town-hall meetings. Team, employees, and mgmt. all in council to form &quot;common bond.&quot;</td>
<td>+ design was attempted from the beginning as sociotechnical, IT played an important but supporting role.</td>
<td>+ complete cooperation across functions and management levels based on a vision statement that laid out a mandate.</td>
<td>+ management conveyed ready strenuous support and the seriousness of the situation to associates participated fully. +/- poorly sequenced rollout causes some delays in implementation.</td>
<td>+ heavy use of process tools &amp; evaluation metrics including measures of goal expectations and actual performance impacts.</td>
<td>High</td>
</tr>
</tbody>
</table>
Com-disco
+ wanted dramatic change but recognized that risk aversion was high, made quick move to incrementalism.
+ heavy use of external information including consultants, customer surveys and internal audit trails.
+ team-based change agents with senior mgmt. champion, did not include middle mgmt.
+ risk aversion pushes for incremental changes.
+ open mgmt. and team brainstorming, but org. barriers still problematic.
— began project with concept that IT was principal driver of change, recognized this was not working and modified effort to a non-IT-based redesign.
— pockets of cross-functional resistance and competition. This was not completely resolved in implementation.

Paper Co.
+/− charged ahead with a revolutionary project but unable to realize radical change. Had to fall back to whatever was doable when all else failed.
— refusal of functional mgmt. to adapt major changes or lessons learned.
— Technology scanners exploit IT’s capabilities.
— Not much deuerto learning, rigid mgmt. style slow to alter strategy.
External consultants finally convinced a move away from IT centric approach, but too late.

+/− senior mgmt. change agent sets direction, middle mgmt. resists.
— overaggressiveness blinded attention to overall business impact — limited communication outside function — lack of cross-training and no upward movement
— IT-dominated approach with little integration of business case or sociotechnical issues, viewed as a limiting factor.

+/− severe resistance by functional mgmt. to radical designs, but some synergy after implemented.
+/− management readiness to effect change but middle/functional mgmt. counts with reactive position.
— didn’t convey importance to employee satisfaction in redesign.
— process metrics used as a persuasion tool to remove emotion and motivate cooperation.

+ indicates a positive influence on project success.
− indicates a negative influence on project success.
While the granularity of this analysis does not allow us to “predict” success, based on a simple summation of facilitators and inhibitors in each case, the results seem to indicate that successful projects have more facilitators. Some may have a more local impact on a certain aspect or phase of BPC. However, we believe that the inference that a highly successful BPC effort should demonstrate numerous positive facilitators and minimize inhibitors is reasonable. As indicated in Table 9, AT&T was classified as the most successful project consistently showing positive facilitators in all of the BPC management framework’s dimensions. At the other extreme, Paper Co., which had many more inhibitors, was the least successful project. Inhibitors show the greatest clustering in the areas of cultural readiness and change management. These, in fact, were the major issues that the respondent continuously pointed to during interviews as the major problems they foresaw in future BPC efforts. While this research found an important role for IT in support of BPC, the message from these case studies is that IT should not drive a BPC project.

While broad generalizations from these three case studies may be premature, the patterns in Table 9 indicate several important themes that could have implications for both research and practice:

- There tend to be strategic “stimuli” ranging from financial pressures, continued market leaderships, customer dissatisfaction and/or organization inefficiencies that trigger firms to undertake business process change. The stimulus itself is not necessarily a determinant of success.
- Organizations attempting to change performance radically seem to require some “sense of urgency” in their business situation, which translates in turn into a compelling vision that is espoused throughout the organization. Interestingly, at least according to these preliminary findings, BPC does not have to be proactive to be successful.
- Incremental process change can work but appears to be appropriate when risk aversion is lower and environmental conditions less dire.
- Successful BPC projects are enabled in organizations that: (1) have a propensity to learn from best practice and customer needs; (2) leverage external information and experts; and (3) exhibit deutero learning whereby employees individually and collectively reflect on their past experiences, modify their course when necessary, and discover new opportunities.
- Successful BPC projects establish an objective and unbiased team or individual that continues to push the organization and line functions to find new innovative processes. These “challengers” must be empowered to implement the changes without barriers from functional managers.
- An important ingredient in the right cultural mix for successful BPC is leadership from the top, together with an atmosphere of open communication, participation, and cross-training.
- Successful BPC involves the coalescence of “IT” and business best practice, whereby IT plays a supportive, but not always commanding role that is linked to the business case for BPC. Balanced consideration of the social, technical,
and business value elements should be maintained throughout the project.

- To quell likely pockets of resistance, an organization's "vision" for change must be embraced throughout all levels of the organization, especially by those functional and middle-level managers affected by the process change. To achieve this requires continuous articulation and communication of the value of reporting results and how each individual contributing and accountable to the overall company's change effort. At this individual level, concern should be placed on how the BPC will improve employee satisfaction and the QWL.

- Measurement is key to success. A well-defined process management approach should include a documented methodology of change, use objective and quantified metrics showing the value of change, continuously communicate process metrics to senior management, and possess a well-documented rollout of the new process design.

The current findings are, of course, preliminary. They are based on only three case studies, and claims of external validity must await further examination with a wider sample of projects with different motivations and contexts. However, the BPC management framework provided a good structure for the case studies and we are encouraged that future research will continue to refine the framework. Further, while this study focused on a flat model—where all constructs were considered antecedents to success—more elaborate testing would involve interrelationships between components of the model. For instance, how does a conducive change environment facilitate change and process management practices? Is there symbiotic interaction between change and process management? We believe that similar studies, while limited in their ability to establish invariant relationships between variables in the positivist tradition, provide tremendous opportunity to provide rich contextual framing of firms undertaking BPC. Consistent application of frameworks that are flexible in their interpretation, as are the practices of the phenomenon being investigated, can then lead to significant theoretical insights. Such an effort can refine the research model's dimensions and provide more depth to its constructs. These efforts can also complement or lead to further external validation through large-scale survey-based empirical analysis. The ultimate goal, however, may not be deterministic but may be to provide managers with insight into which situational conditions best predict the strength that particular facilitators or inhibitors will have on BPC project success.

Conclusion

RESPONSIVE, GLOBAL, NETWORKED, TEAM-BASED, KNOWLEDGE-BASED—are some of the watchwords for contemporary organizations. Their currency indicates the importance of change as organizations work to reinvent themselves along these untested dimensions. The three cases discussed in this paper epitomize the contrasts between and within firms that undertake major change. While many change management prescriptions are affirmed through these analyses, we would like to leave the reader with three simple but overarching observations, based on our experience with BPC.
First is the notion of balance. As the old adage goes, "Too much of anything is bad." We observed that being too technocentric, too bureaucratic, or too inflexible were all detrimental to success. Firms that carefully balance the social and the technical, leadership and participation, emergent and deliberate strategy, and technology and business, among others, have the greatest propensity for success. This leads to the second observation, reevaluation. Even balances have to be reevaluated periodically. Firms that plan still have to evaluate. Deviations from the course of the plan should not be interpreted as failure but as opportunity to reevaluate and learn. Organizations are complex and interactive, and outcomes of major changes cannot be planned with precision: We must "learn to learn" and continue to "learn by doing." And finally, consistent with this complexity, is the recognition of interdependence. One part of an organization that performs major change in isolation, without examining the impact or inputs from the broader context, will belie the essence of the organizational entity. Similarly, inhibitors in the change environment can have a multiplier effect on the conduct of change management. In contrast, effective change management, despite the context, can have a recursive impact on the nature of the context itself. In sum, BPC requires effective management of balance, reevaluation, and interdependence. The successful case in our sample demonstrated all three.

NOTES
1. Interested readers are referred to a more comprehensive description of the model in [50].
2. In many instances the respondent provided sensitive information and the investigators were requested to use the content of that information with professional judgment and solely for academic exercise.
3. The name of this company was disguised to maintain confidentiality.

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