An Integrative Framework for Identifying
And Managing Risks Associated With
Large Scale Reengineering Efforts

Eric K. Clemons  Michael C. Row  Matt E. Thatcher
The Wharton School
University of Pennsylvania
Philadelphia, PA 19104

Abstract
Recent experience suggests that many reengineering efforts fail, and that they fail for reasons unrelated to the technical ability of organizations to implement information systems. Our research suggests that the two principal reasons for failure are functionality risk and political risk, respectively, the organization’s inability to understand its uncertain future strategic needs, and its inability to make painful and difficult changes in response to these future strategic needs. Recent research in the organizational change literature suggests that these risks are the result of conflict among the organization’s current strategy, its espoused degree of change, the actually accepted and generally smaller degree of change, and the generally larger degree of change that would be in some sense optimal. Moreover, the conflicts among these may be unperceived or undiscussable within the organization, exacerbating the risks. We summarize in a few testable hypotheses our experience with managing the risks of reengineering, and use a small set of representative case studies to examine these hypotheses informally.

1. Introduction
According to recent surveys, 88% of large corporations are involved in business process reengineering projects, and many others plan to begin projects soon [5]. However, failure rates for large scale information technology (IT) projects and reengineering efforts are extremely high, as many firms either abandon their efforts after making significant investments or fail to achieve anticipated results from their redesigns [5,14]. The direct costs (e.g., project delays and cost overruns) associated with these reengineering failures are enormous, sometimes costing organizations millions, or even billions, of dollars. The indirect costs (e.g., failure to achieve competitive objectives) may be even higher. The high failure rates associated with reengineering efforts, combined with the implications of such failure, suggest that organizations need to improve their ability to identify and to manage the associated risks. This paper proposes a descriptive framework, based on literature from the areas of information technology, organizational behavior, and strategic management, that highlights sources of risk of reengineering efforts, which in turn will help managers identify and better manage these risks.

An organization involved in developing and implementing a large scale IT project typically faces risks that threaten the successful completion of the project [9]. The inability of managers to identify and to manage these risks significantly contributes to reengineering failures. We categorize these risks as follows:

- **Financial Risk** - the risk that the IT project will not generate the expected returns on investment for the organization.
- **Technical Risk** - the risk that the technologies or methodologies necessary to develop and implement the IT project simply do not exist.
- **Project Risk** - the risk created when firms attempt to develop systems in areas outside their traditional strengths and expertise or beyond the competence of the development team.
- **Functionality Risk** - the risk that the completed system will not meet the present or future needs of its users, either because the systems designers misunderstood the organization’s needs, or because these needs have changed.
- **Political Risk** - the risk that the systems will not be completed, because of organizational resistance, or because of the gradual loss of commitment to the project.

Clemons notes that if properly identified early in project development, these risks can often actively be managed and controlled. Moreover, steps can be taken that transfer exposure from one risk component, perhaps...
difficult to manage, to another, which may be easier to reduce [9].

The degree to which each risk identified above threatens organizational systems efforts has changed significantly over the past decades. The risk profile facing innovating firms from the late 1960s through the early 1980s was dominated by technical risk and financial risk. First, the cost/performance ratio for hardware was 100s of times higher than today. Secondly, estimation procedures for project size and for project cost were far less accurate during this time period. Thirdly, the technological capabilities (e.g., memory, speed and storage capacity) were quite limited by today’s standards and could easily be exceeded by overly aggressive systems design. Moreover, most large-scale IT projects from the late 1960s involved the automation of existing processes; political risk posed little threat, as lower level employees commonly affected by such innovations were typically unable to resist the IT project successfully. Finally, functionality risk was limited and defining requirements for an accounts payable system, or other typical projects of the period, was a relatively easy task.

Conversely, the risk profile facing innovating firms today is dominated by functionality and political risks. This shift in the risk profile away from technical and financial risk has been facilitated by changes in the technological environment and research advances in the area of IT development and implementation. Dramatic increases in technological capabilities have been accompanied by dramatic decreases in hardware costs. There have been significant improvements in estimation procedures for project size and for project cost and methodological advances in software development (e.g., object-oriented, prototyping, code reusability, CASE tools, etc.). While not reducing total software costs, these advancements have reduced the associated cost overruns. Another reason for the growing prominence of functionality and political risks facing innovating firms is that today, large scale IT projects tend to be more strategic in nature and involve more than simple process automation. In fact, we believe that for reasons described below, this change in risk profile is most extreme for the class of strategic systems projects that have been termed business reengineering.

Business reengineering efforts are frequently described as “greenfields” or “clean slate” attempts to determine the most appropriate future design for an organization. Such reengineering efforts generally attempt to start without preconceptions about the company’s future strategy or operating environment that are restricted by the company’s current strategy, business environment, or technical capabilities; this creates considerable uncertainty about the precise details of the future for which the systems are being built. Developing a system for an uncertain future increases functionality risk, since future needs and requirements for the system and its users may be poorly understood by the organization. In addition, reengineering efforts requiring “clean slate” changes will involve the redistribution of organizational power and resources as certain tasks and operating units become obsolete. Personnel threatened by the changes will try to protect the value of their existing skills and expertise by resisting the change (political risk); senior personnel may be able to do so quite effectively.

This paper examines the effects of technological factors and of factors outside of technology on the organization’s ability to initiate, develop, and implement large scale IT projects that meet the present and future needs of the firm and its environment. Changes in the risk profile threatening the organization’s ability to do this, and the increasing importance of non-technical issues, are most extreme for reengineering projects. Section 2 introduces the basic ideas, terms and structure of a framework that identifies the risks associated with large-scale reengineering efforts. Section 3 elaborates on this framework, reviews relevant literature, and presents hypotheses that formalize the basic ideas of our framework. Sections 4 and 5 present case examples investigating the issues described in the previous sections and explicitly relates them back to the hypotheses; while this neither proves nor conclusively supports the hypotheses, it does provide empirical support for their plausibility. Section 6 provides our conclusions and explores the managerial implications of our findings.

2. Framework Development

We develop a framework that examines the risks associated with reengineering efforts. This framework is based on normative theories describing how firms should develop and should implement organizational strategy, and also on descriptive theories describing how firms actually do develop and do implement strategy. These theories are drawn from literature in organizational behavior and strategic management (e.g., [1,2,20,21]). First, we present a brief review of relevant literature.

Our framework is inspired by concepts and terminology introduced by Chris Argyris. Argyris [2,3,4] has developed a descriptive framework that examines how individuals within organizations deal with each other; how they communicate, manage issues, and resolve conflict. This framework, termed
"action science", claims that individuals unknowingly possess two different theories of action that largely determine the structure of their interactions; espoused theory and theory-in-use. Espoused theory represents the values and beliefs individuals claim to hold and publicly support, while theory-in-use represents the values and beliefs individuals actually follow when they communicate with each other and when they implement actions to resolve conflict. Argyris further states that while espoused theory varies widely among individuals, theory-in-use varies very little. In particular, Argyris claims that the goals that govern and motivate the actions of most individuals (i.e., theory-in-use) include: 1) maximizing winning and minimizing losing, 2) being in unilateral control over others, 3) saving face unilaterally, and 4) being rational. To achieve these goals, individuals typically implement defensive routines, psychological defenses against change, intended to reduce risk, stress, pain, and embarrassment associated with interacting with others. These defensive routines are behavior programs that are typically entrenched in individuals early in life (and may even be the result of millions of years of evolution) and include the avoidance of discussing and addressing critical issues. In general, Argyris has accumulated a considerable body of evidence (e.g., [2,3,4]) demonstrating that significant differences do exist between individuals' theory-in-use and their espoused theory. He has convincingly argued that these differences are undetected because of, and are facilitated by, individuals' tendencies to engage in unproductive, entrenched behavior programs.

We attempt to apply these terms and concepts, which Argyris developed to describe individual level interaction and communication, to organizational strategy. In particular, we believe that most firms have at all times two classes of strategy held by personnel within the firm; in the style of Argyris, we term these strategy espoused and strategies-in-use:

1. **Strategy espoused**: This vector represents what an organization is presently doing prior to the development of proposed changes within the organization. For our purposes, this vector describes the organization's position with respect to resources, skills, and competencies prior to the reengineering effort.

2. **Strategies-in-use**: This vector represents what personnel within the organization actually believe the strategy of the firm should be. In a stable business environment, strategies-in-use and current strategy are likely to exhibit considerable agreement within successful firms. In turbulent and changing times, there is likely to be considerable disagreement between strategies-in-use and strategy espoused, and even among strategies-in-use of different individuals. Our experience suggests that strategies-in-use largely dictate the strategy implemented by the firm, and the systems actually developed to support them.

3. **Strategy Espoused**: This vector represents what an organization claims to believe and claims it will do in response to changing environmental conditions and changing customer needs. A strategy espoused is publicly held and is publicly

Differences between strategy espoused and strategies-in-use arise from two principal sources:

- Defensive routines that cause the individuals to avoid potentially painful or embarrassing discussion of critical issues [2,3,4] and
- Organizational tendencies to reward behaviors that precede past successes, and may even have directly caused those successes; thus, long after these behaviors have ceased to be productive, individuals may repeat them, and cling to beliefs about their strategic effectiveness [13, 18, 19, 20, 21].

Our direct personal experience demonstrates that these differences can occur even among personnel in frequent contact, and among the most senior personnel within an organization. Unfortunately, as Argyris demonstrates, defensive routines generate behavior that frequently cause these differences to remain undetected and unacknowledged.

Having provided this brief background for the concepts and terminology used in our framework, Figure 1 now shows the foundation of the framework, with each concept identified representing a separate vector. As we will show in Section 3, these four vectors interact to define the risks facing innovating firms. The vectors are:

1. **Current**: This vector represents what an organization is presently doing prior to the development of proposed changes within the organization. For our purposes, this vector describes the organization's position with respect to resources, skills, and competencies prior to the reengineering effort.

2. **Strategy-In-Use**: This vector represents what personnel within the organization actually believe the strategy of the firm should be. In a stable business environment, strategies-in-use and current strategy are likely to exhibit considerable agreement within successful firms. In turbulent and changing times, there is likely to be considerable disagreement between strategies-in-use and strategy espoused, and even among strategies-in-use of different individuals. Our experience suggests that strategies-in-use largely dictate the strategy implemented by the firm, and the systems actually developed to support them.

3. **Strategy Espoused**: This vector represents what an organization claims to believe and claims it will do in response to changing environmental conditions and changing customer needs. A strategy espoused is publicly held and is publicly
acknowledged and often coincides with organizational objectives, ideals or mission statements.

4. **Optimality**: This vector represents an idealized strategy, reflecting what an organization should do as its optimal response to its changing business environment; this is dictated by its current strategy, its resource endowment, and its technological capabilities. It in turn dictates the ideal, but unrealizable, objectives of business reengineering efforts, including strategic change and systems development efforts.

![Figure 1: Framework Definition](image)

In Figure 1, the angles separating each vector qualitatively describe the extent to which these factors identified above differ. For example, the greater the angle formed by the vector “optimality” and the vector “current”, the more the organization needs to change to respond effectively to changing environmental conditions. If the angle between these two vectors is very small, this suggests that the organization’s environment is relatively stable, requiring only incremental changes on the firm’s part. When examining large scale strategic IT projects and reengineering efforts, we expect this difference to be relatively large. In addition, the larger the angle between strategy espoused and strategy-in-use, the bigger the difference between what an organization’s personnel claim to believe about what they need to be doing and what they actually believe. An organization’s strategy espoused typically falls short of what the firm should do, as shown in the optimality vector. It is the gaps between these vectors and their relative positions that interest us, not their precise directions or the nature of the underlying space in which they are drawn.

As noted earlier, we expect that strategies espoused and strategies-in-use will typically differ within an organization; that strategies-in-use will, in turn, exhibit significant disagreements as well; and that these disagreements will usually remain undetected. Strategies-in-use will frequently provide the basis for all individual behavior within the firm, and will thus frequently be the basis for requirements specifications and systems development efforts. Thus, the result of differences between strategy espoused and strategies-in-use is that actual reengineering efforts will frequently fall short not only of optimal possibilities but even of those strategies publicly embraced by the firm. This is summarized in figure 1 and is formalized in the following hypotheses:

**Hypothesis 1a**: An organization’s strategy-in-use will typically be more consistent with the firm’s current position than will be the organization’s espoused strategies. That is, organizations have a tendency to propose to make, and to claim to support, changes that are more radical than the changes they actually support and implement.

**Hypothesis 1b**: The reengineering program eventually developed and implemented by an organization will typically be more consistent with the firm’s existing competencies and power structure, as reflected in its strategy-in-use, than with the firm’s strategy espoused.

In Section 3, we further develop hypotheses regarding the relationships among the four vectors identified in figure 1.

### 3. Literature Review and Hypothesis Development

Section 2 identified four main concepts (vectors) that define our framework. By relating the framework to the findings from literature in the areas of IT, strategic management, and organizational behavior, we identify the sources of functionality and political risk, identify the trade-offs between these risks, and develop a series of hypotheses that will formalize our framework. Our goal is to synthesize findings from previous literature into a coherent framework that will help managers predict, reduce, and control the risks associated with reengineering efforts.

#### 3.1. Political Risk

Several researchers have studied how political risk threatens the successful implementation of proposed innovations within the organization [1,12,20,21]. These authors suggest that the capacity of a proposed innovation to influence the value and applicability of existing organizational competencies defines the risks to
an innovation's development and implementation. In particular,

- **Competence-enhancing changes** preserve the value of, or further entrench, existing skills, knowledge, resources and relationships (competencies) within the organization and

- **Competence-destroying changes** devalue, or render obsolete, existing competencies within the organization [21].

Tushman and Romanelli [21] suggest that competence-destroying changes (relatively short periods of discontinuous change where strategy, power, structure and controls are fundamentally realigned), will be associated with an increase in organizational turbulence and conflict as the firm’s political subsystems react to each other and attempt to protect the value and applicability of existing competencies. The more a proposed strategic reorientation, or strategy espoused, threatens to disrupt or devalue existing competencies (e.g., entrenched, rewarded patterns of activities and processes), the greater the potential redistribution of power within the firm, and thus, the greater the internal conflict among different interest groups as groups try to protect the value of their existing competencies. Conversely, the more a proposed strategic reorientation enhances the value and applicability of the organization’s existing competencies, and thus, the less it affects the potential redistribution of power and resources within the firm, the less the internal conflict among different interest groups. If resistance to change is sufficient, the organization will fail to develop or implement projects, including reengineering projects, consistent with the proposed strategic orientation. Therefore, organizations attempting to develop and implement IT projects inconsistent with their existing culture and competencies typically fail to complete the projects due to organizational resistance.

**Hypothesis 2a:** The more a strategic reorientation threatens to disrupt or devalue existing skills within the firm, or requires elimination of previously successful and previously rewarded behavior, the more likely it is to be resisted; this will be manifest as a significant gap between the firm’s public strategy espoused and the collection of individuals’ private strategies-in-use. Therefore, the greater the gap between strategy espoused and strategies-in-use, the greater the organizational resistance and the more likely the organization’s strategic change initiative is to fail. This suggests that high political risk, a frequent cause of failure of business reengineering efforts, is associated not with the degree of radical change espoused (difference between current practice and strategy espoused) but by the degree of unaccepted change proposed (difference between strategy espoused and strategies-in-use). [see figure 2]

![Figure 2: Hypothesis 2a](image)

**3.2. Functionality Risk**

Several researchers have addressed the ways that functionality risk threatens the successful implementation of proposed innovations within the organization [13,18,19]. Individuals and organizations create and use behavior programs, learned behaviors performed without thinking, to reproduce past successes [11,13,18,19]. While the use of behavior programs helps conserve individuals’ limited cognitive and analytical resources, it also encourages individuals to misperceive their environment [18]. The result of using these behavior programs is that organizations often propose incremental changes that are too small and thus inappropriate to meet changing environmental demands, but that further entrench existing skills and competencies [20,21].

**Hypothesis 2b:** The less proposed strategic business reengineering requires competence-destroying change within the organization, the less it will be resisted and the smaller will be the gap between the firm’s public strategy espoused and the collection of individuals’ private strategies-in-use; this will reduce political risk and increase the likelihood that proposed reengineering efforts are successfully completed. However, the more the proposed reengineering effort avoids competence-destroying change that may indeed be required by radically changing environmental conditions, the
more likely it is that the project will fall far short of supporting an optimal new strategy, creating significant functionality risk. To the degree that the reengineering effort does not adequately position the firm for the future, it will fail [see figure 3]. The area in figure 3, between the strategy espoused and optimality, represents the minimum level of functionality risk.

Thus, hypotheses 2.a and 2.b deal with functionality and political risk caused by the relative gaps among optimal strategy, strategy espoused and strategies-in-use. These hypotheses suggest that a firm’s choice of strategic objectives for its business reengineering efforts require effectively balancing or trading off political risk and functionality risk.

3.3. Other Factors Affecting the Risk Profile

Employees at more successful firms generally receive more positive reinforcement, both from the environment and from satisfied managers; thus, these employees at successful firms are more likely to codify their behavior into learned patterns, and to rely upon these learned behavior programs to allow them to repeat their past successes [18]. Actions believed to have led to previous success tends to be rewarded, reinforced and therefore, replicated even when they are no longer appropriate. When employees perform certain actions and they seem to get along well, the employees tend to attribute the “good performance”, often mistakenly, to those actions [15]. Employees often wait until long after their behavior programs have been explicitly disconfirmed before considering alternative actions. Thus, rewarded success often sows the seeds of future failure as successful organizations typically suffer from overconfidence and intellectual arrogance and, therefore fail to perceive the need for change or to discuss critical factors in their strategy. These findings suggest that successful organizations, in particular, are threatened by:

- inertial forces, which impede the firm’s ability to reassess environmental opportunities and initiate new strategic orientations
- defensive routines, which impede the firm’s ability to disrupt existing relationships and competencies sufficiently to support the new orientation.

Hypothesis 3: The more successful an organization is, the greater are the inertial forces for proposing incremental, competence-enhancing changes and the greater are the defensive routines implemented by individuals to avoid competence-destroying changes. These forces encourage people to misperceive the environment and increase the likelihood that the strategy espoused will not meet the changing needs of the external environment. Therefore, when faced with a changing, uncertain environment, the more successful an organization has been in the past, the more likely the proposed project will fail due to high functionality risk. Moreover, given that a firm does propose a strategy espoused in close agreement with a new optimal strategy, entrenched defensive routines, exacerbated by previous organizational success, will typically result in the actual development and implementation of strategies-in-use far less radical than those originally proposed. While reducing political risk, such actions also result in high functionality risk.

The cumulative implications of the literature reviewed in this section are that organizations facing a volatile, uncertain environment succeed when they achieve:

- external or environmental consistency between strategy espoused and the demands of the environment, as reflected in the idealized optimal strategy for the firm
- internal or organizational consistency among public strategy espoused and privately held strategies-in-use and among these various strategies-in-use, enabling them to overcome resistance and political risk and enabling them to achieve their espoused goals.

That is, for a strategic business reengineering program to succeed fully, it must embrace the right strategic goals and attempt to move the organization far enough in the correct direction, and it must be
embraced by the organization and allowed to proceed far enough in the stated direction. The business implications of this are summarized in Hypothesis 4.

**Hypothesis 4:** Strategic business reengineering efforts will succeed, and will produce strategic benefits that allow their implementors to become high-performing organizations relative to their competitors, to the extent that they first develop:

- external consistency between what is attempted and what is ideal for the organization, given its future environment and its current resource endowment (that is, strategy espoused must be correctly determined)
- internal consistency between what is attempted and what key personnel actually believe should be attempted (that is, public strategy espoused and private strategies-in-use must be compatible)

The following two sections briefly summarize supporting data that we have developed more fully previously [6,7].

4. Rosenbluth Travel

The travel industry changed dramatically due to regulatory change in the airline industry in 1978. Rosenbluth Travel (RT), which enjoyed a charismatic leader with a coherent vision of the future, was able to see and embrace an appropriate strategy, and benefited enormously. In early 1980, Rosenbluth Travel was a small, regional, family-run firm in the travel industry, with gross annual sales of $40 million. In 1990, RT emerged as one of the five largest U.S. travel management companies, with gross annual sales of $1.3 billion.

Before deregulation, the primary role of travel agents such as RT was to distribute tickets and to provide customers with advice on vacation destinations. Since routes and fares were relatively stable, the travel agency industry was unable to provide differentiated service for business travel. As a result, the primary focus of travel agents was on meeting the needs of the leisure traveler.

In 1978, deregulation created fundamental changes in the travel industry. It dramatically increased the complexity of route and fare structures, changed the products and services demanded by customers, and changed the cost structure of the industry. After deregulation, airlines were able to add or delete routes and change fares at will. Due to increased competition between airlines, the number of changes in routes and fares increased dramatically, creating a level of complexity that was staggering to the customers and that needed to be managed. Travel agents (TAs) needed to be able to help customers achieve the best cost and convenience in these complex deregulated markets.

Deregulation also led to the emergence of the corporate travel market, as the costs associated with business travel sky-rocketed. Airlines sought to increase revenue by charging the price-inelastic business travelers much higher prices. This explosion of business travel costs created incentives for corporations to reduce travel costs, which frequently represented the third largest corporate expense after payroll and data processing.

4.1. Implications for RT

Deregulation led to dramatic changes in the travel industry and had significant implications for firms such as RT. In particular, TAs had to change their primary role in the travel industry in order to meet effectively the needs of the new environment and its customers. The TAs could now play a major role in managing complexity introduced by deregulation and could address the growing needs of the emerging business travel market. This dramatic change in roles required radical changes in strategic orientation on the part of RT if it hoped to succeed and to grow in the future environment.

Hal Rosenbluth took over executive leadership of RT at the time of deregulation. Hal was immediately seen within the firm as having strategic vision and was believed to have an uncanny ability to see the “right stuff”. As documented in the original case study [6], as the senior officer in a family owned business he was able to create a publicly held strategy espoused. Hindsight demonstrates that Hal's strategic vision and the resulting strategy espoused were correct; indeed, they have been copied by American Express, Thomas Cook, and virtually all major competitors in the U.S. and abroad [8]. Hal acknowledged that deregulation had created confusion and had enabled the airlines to charge their highest prices to their business customers. More importantly, Hal recognized that RT was no longer in the business of writing tickets, but was now in the “information management business”. Hal proposed to focus RT on providing superior service to business customers, because he believed that corporate travel represented a major opportunity for growth. Hal believed that IT would play a critical role in servicing this market and in helping to manage the complexity introduced by deregulation.

In addition to his vision, or his ability to bring strategy espoused in synch with optimality, Hal was also a charismatic leader who provided, and still provides, strong executive leadership. As was also documented in
the original case study [6], this combination of energy, personality, and leadership enabled Hal to enjoy an almost cult-like following among employees, and thus to have his strategy for the firm widely embraced within the firm. This led to strategies-in-use within the firm that closely matched Hal's vision, and to enthusiastic and vigorous support for change and for activities and systems that effectively supported his proposed strategic vision.

Figure 4: First Change at Rosenbluth Travel
A: Minimum Level of Functionality Risk
B: Unacceptable political risk and unacknowledged functionality risk

Figure 4 summarizes the risks facing RT after deregulation. As shown, the strategy espoused at RT was very close to optimality. Figure 4 also shows that the activities and systems actually implemented by the firm and the strategies espoused by the firm were in close agreement. This consistency between strategy espoused and strategies-in-use, and among individuals’ strategies-in-use, may be attributed to Hal’s ability to get full and active support from the individuals within the firm. Since optimality, strategy espoused and strategies-in-use were all in close agreement, functionality and political risks were minimal (supporting hypotheses 2a and 2b). Implementation of radical changes did not result in internal conflict and were met with little resistance. Hal’s vision reduced the gap between optimality and strategy espoused, resulting in minimal level of functionality risk. This combination of factors enabled RT to exploit several new opportunities, leading to enormous growth (supporting hypothesis 4). Annual gross revenues increased from $40 million in 1980 to $400 million in 1987, to $1.3 billion in 1990. In addition, by 1990, RT had 400 worldwide locations, compared to only eighty-seven in 1987; by 1993, there were over 1,000.

5. A U.K. Banking Industry Example

Dramatic changes in the U.K. banking industry during the late 1980s, including changes in U.K. banking regulation, entrance of foreign competition, and increased domestic competition in what had been an oligopolistic industry, threatened the profitability of the major English clearing banks. One of these banks attempted to respond to these changes using its vast financial resources, but found that it was unable either to embrace a new strategic vision or to implement it fully successfully. In particular, the bank’s continued reliance upon entrenched strategies and entrenched competencies led to surprisingly conservative estimates of the future and to dangerously conservative strategies. Although far too conservative, the bank’s strategy espoused was still too radical to be implemented in the bank’s culture of complacency and defensive routines. Thus, the strategic reorientation fell far short of optimality but went far past the strategies-in-use and thus far past the strategies and systems eventually implemented (supporting hypothesis 1a and hypothesis 3). This is represented in figure 5. Initially, gaps among optimality, strategy espoused and strategies-in-use went unseen. These inconsistencies generally did not change what the bank personnel actually did, believed, or valued, but instead caused personnel to adopt changes less radical than those originally proposed.

Figure 5: U.K. Banking Firm
A: Minimum Level of Functionality Risk
B: Unacceptable political risk and unacknowledged functionality risk

When the problems caused by resistance to change could no longer be ignored, the manager of the reengineering project was empowered to use incentives and annual bonuses, representing close to a quarter of annual compensation, to force individuals to act in accordance with the public strategy espoused. These actions, while apparently safer than accepting the
political risk of attempting to shift privately held strategies-in-use too far, or than accepting the functionality risk of fully ignoring the gap between strategies-in-use and strategy espoused, still proved quite costly to the organization and to senior IT executives. Indeed, a new senior management team is now quite concerned that the recently completed systems, costing hundreds of millions of pounds sterling, provide very limited new functionality, add very little incremental value either to the Bank or to its customers, and do very little to support new strategic ventures. Just as serious, the actions taken to force implementation beyond the very conservative strategies-in-use have been damaging to the careers of senior IT personnel. Predictably, there has been considerable turmoil and staff turnover within the IT function.

6. Conclusions and Managerial Implications

This paper has developed a descriptive framework and a series of hypotheses to help managers identify the most critical risks to IT development and implementation: functionality risk and political risk. These risks are especially severe in reengineering efforts, and we have therefore stressed the implications of these risks for the high rate of failure of strategic-business reengineering programs. This framework has also enabled us to make some predictions, in the form of testable hypotheses, of when reengineering efforts are likely to succeed and when they are likely to fail. Two case study examples were presented that provided initial support for the framework hypotheses.

We noted that firms were more likely to succeed with their strategic reengineering efforts, and more likely to achieve strategic advantage and become high performing organizations, if they were able to achieve the following strategic alignments:

- external or environmental consistency between strategy espoused and the demands of the environment
- internal or organizational consistency among public strategy espoused and privately held strategies-in-use and among these various strategies-in-use

Actions taken to reduce political risk and to achieve internal consistency result in strategies-in-use that are far too conservative. While this might appear to protect the project manager, and reduces immediate and short-term political risk, it usually results in reengineering efforts that fall far short of protecting the organization’s long term strategic needs. This generally results in firms adopting incremental and limited change, even in the face of radical change in business environment and the need for radical change in strategy and in supporting information technology applications.

Such conservative actions are usually attributed to inertia, forces and unconscious actions by key individuals. These may, however, result from conscious strategies of these individuals as they protect themselves in the face of the defensive routines of others; indeed many senior information systems officers, when they have acknowledged this tradeoff, have explicitly defended their choice to us. They have been quite clear about their belief that unresolved functionality risk might indeed threaten them or their successors in several years time, while unresolved political risk could terminate their careers immediately.

It is useful at this point to suggest actions that can be taken to reduce both political and functionality risk, and to enhance both forms of strategic alignment. While space does not permit a complete treatment of this complex topic, our recent experience with managing the risk of reengineering at the board level of two Fortune 100 service companies suggests the following observations:

- Traditional facilitation, aimed at achieving consensus and avoiding confrontation, may indeed be counter-productive; that is, if consensus is achieved by moving the strategy espoused closer to the more conservative strategies-in-use, the increase in functionality risk may be fatal to the project
- Unskilled intervention, aimed at forcing unwilling participants to discuss the undiscussable, at forcing them to abandon defensive routines, and at forcing them to reconcile the differences between their private positions and the public strategy espoused, will certainly create unacceptable political risk, which likewise may be fatal to the project
- The scenario analysis process [16,17] can be effective in surfacing the assumptions behind privately held strategies; more importantly, it can surface the assumptions behind the officially sanctioned strategy espoused, and lead either to its more wide acceptance or its modification, as appropriate. Thus, both functionality and political risk can be reduced.
- Action science can be used to surface private assumptions and privately held strategies-in-use, leading to informed discussion of different positions, or at least to informed assessment of political risks of strategic reengineering efforts [10].

Proceedings of the 28th Annual Hawaii International Conference on System Sciences — 1995
References


Acknowledgement

We acknowledge the careful and insightful reading and significant contributions of Harold Levine, without whose contribution our own “strategy espoused” for this paper might never have been made clear.