E-business migration: a process model

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Abstract

Purpose – This work aims to develop a process model for the migration of the traditional firm to an appropriate e-business strategy and architecture.

Design/methodology/approach – The work is based on a range of published works and professional experience, combining narrative with analysis.

Findings – This complex model addresses the multiplicity of factors that must be included in effective e-business migration. The model addresses technology, business processes, strategy and the consequent organizational change.

Originality/value – Focuses on a model that can serve as a basis for dispelling a number of myths reflected in current e-business migration and implementation efforts.

Keywords Electronic commerce, Organizational change

Paper type General review

Introduction

Much, if not most, attention, in both the literature related to the "digital economy" and in the activities of those within the consulting community working on internet applications for business, has been addressed to electronic commerce in its more traditional definition as "focused around individual business transactions that use the net as medium of exchange, including business to business as well as business to consumer" (Hartman and Sifonis, 2000, p. xviii). Indeed, most of the above have primarily addressed e-commerce for new startups and for traditional firms moving toward integrating some form of electronic marketing and sales, purchasing, or customer service with their current businesses.

Though there is significant semantic muddying of the terminology, a broader conception of the potential impact of the internet on business has generally been labeled e-business. Wigand (1997, p. 5) has defined e-business as "...[t]he seamless application of information and communication technology from its point of origin to its end point along the entire value-chain of business processes...conducted electronically and designed to enable the accomplishment of a business goal". Generally, it refers to the utilization of internet information technology (IT) throughout the business and industry value chains (Gloor, 2000). While e-commerce is clearly one of its components, less attention has been paid to this broader conception until fairly recently.

Most businesses are not "dot-com" startups and many are not concerned only with electronic markets. The majority of firms are traditional businesses, rather than either internet-centered startups or firms concerned only with electronic markets. They must grapple with finding a new architecture to remain competitive in an internet-influenced

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economy and successfully navigating the new business environment. These firms are the center of interest in this effort.

This work synthesizes both the literature and professional experience to develop a process model for the migration of the traditional firm to an appropriate e-business strategy and architecture. The model addresses technology, business processes, strategy and the consequent organizational change. Finally, the model is used to address a number of myths reflected in current e-business migration and implementation efforts.

E-business and the business process perspective

A business process is "...a set of logically connected tasks performed to achieve a specified business outcome" (Jayachandra, 1994). It is a rational organization of people, materials, equipment and energy through systems, procedures and methods into work activities designed to produce a specified work product or outcome. Business processes have defined inputs, service providers, clients, and results. They can exist within functional units, span departmental boundaries within the organization, or take place across organizations. The organization is conceived as a system of business processes used to achieve its objectives.

Business process in recent management practice

The business process perspective came to the fore in the late 1980s and 1990s largely as the result of the popularity of business process reengineering (BPR). Hammer and Champy (1993), pioneers in the field, define it as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed". By the mid-1990s, a number of large firms had started to address their legacy of scattered and antiquated internal information system through the adoption of enterprise resource planning (ERP). ERP suites, produced by firms such as SAP, Peoplesoft and Baan, were designed to provide an up-to-date integrated internal IT infrastructure for the firm by upgrading older systems, applying IT to manual systems that had never been computerized, and tying all of the systems together. Such organization-wide massive changes yielded both large-scale improvements in some instances, such as Cisco, Microsoft and Coca-Cola, and major failures at companies such as Dow Chemical, Mobil Europe, and FoxMeyer Drug, which blamed its ERP efforts for helping drive it into bankruptcy (Plotkin, 1999). A final antecedent to the use of business process in e-business is the use of electronic data interchange (EDI) by some firms in inter-organizational relationships. The relevant processes in both organizations were impacted, both producing data and responding to its reception. Such private networks, being so expensive to set up and maintain, were generally limited to the largest firms.

Cataloging business processes

BPR and ERP efforts have led to a catalogue of the business processes in firms. Xerox, for example, identified 67 processes categorized into 20 areas for major business units involved with sales, service and business operations. It further identified 76 enterprise processes in 14 areas at the company-wide level. Others like IBM and the American Productivity and Quality Center have similarly classified processes (Camp, 1995). MIT

has developed a *Process Handbook* as a tool for sharing and managing knowledge to help redesign and improve business processes. The handbook project is an attempt to:

- develop methodologies for representing, codifying and cataloging processes; and
- collect, organize and analyze example processes.

It is a knowledge-sharing exercise to permit organizations to better analyze and evaluate their own processes in the light of what others have done before (Malone *et al.*, 2003). While these attempts at enumerating business process are useful and the knowledge produced in the efforts highly instructive, an approach appropriate to e-business inquiry must go farther.

A business process framework for e-business

BPR efforts have been largely internal and focused on specific processes. Classic ERP implementations, while addressing a number of processes, were largely technology-centered and internally-oriented. They were often batch processing-based in their earlier generations, though later versions permitted real-time interaction and finally enabled linkage to internet-compatible technology (Norris *et al.*, 2000). EDI, while enabling interorganizational relationships, was also largely batch processing-oriented, and proprietary in architecture and resources. A process conception more oriented to an internet-centered world is needed.

Fingar *et al.* (2000, p. 47) define e-commerce broadly as "an infrastructure for extending a company's inward-focused, unique business processes to customers, trade partners, suppliers and distributors with new outward-facing applications". This typical approach has two flaws: first, it focuses primarily on interorganizational processes. While these are clearly important, the bulk of the process work relevant to e-business is internal to the firm. In their discussion, they assume a well-developed set of internal business processes, but do not address either their development or integration. Second, the process orientation dominates their discussion to the exclusion of the strategic and organization change concerns.

In the e-business context, we suggest several useful dimensions for thinking about business processes. First, we make the distinction between intra-organizational business processes and inter-organizational business processes. The former has been the primary focus of BPR efforts and much of the work on process cataloging. The latter, primarily enabled by the internet, offer substantial improvement over EDI and are the subject of much of the e-commerce applications software on the market.

Next, business processes can be characterized generally by the scope of their coverage within the organization. We define intra-functional processes as business processes resident within a particular function or organizational subunit of the firm. Cross-functional processes, the subject of most of the writing on BPR, are business processes that cut across functions of the firm. Meta-organizational processes are those processes, including knowledge management and broad collaboration/communication efforts, which involve and impact the firm as a whole. This distinction raises significant questions as to the classification of inter-organizational business processes. We believe that most inter-organizational processes will likely be cross-functional in nature.

Moreover, business processes can be classified as standard or non-standard. Certain standard processes will conform to the same general outlines in virtually all

organizations. These lend themselves far more easily to the development of applications packages to be used in automating them. Other processes of the organization are highly idiosyncratic to the firm because of unique organizational factors and conditions. These are unlikely to be subject to easy solutions due to the need for high levels of customization of standard packages or custom application development. Indeed, there may well be pressures to abandon such processes in favor of more standard approaches – which raises the potential for loss of organizational uniqueness and potential advantage in the marketplace.

Finally, business processes can be codifiable or uncodifiable. A fully codifiable process is one, which may be completely specified in detail on all its dimensions. Many of the standard BPR methodologies assume that this is the case and that assumption, within the environment in which they were developed, makes much sense. But, the internet is an interactive medium and some business processes contain substantial conversation components or may well be dominated by such interpersonal exchanges.

Business processes lie at the core of the migration of firms to an e-business. And, while there is a core of experience regarding such processes from efforts such as BPR, ERP and EDI, the process perspective needed for successfully addressing e-business is different. It encompasses more processes both internal and external to the firm. It needs to address business processes at a range of levels from the intra-functional level to the meta-organizational. The level of standardization of processes adopted will greatly influence the uniqueness of the firm and the ease of automating the process involved. Finally, the degree of codification of the processes addressed in the effort can expand greatly beyond those covered in traditional IT efforts.

E-business and the strategy of the firm

While the potential impact of application of internet technology to the business processes of the firm is substantial, there is also significant potential effect on the strategies pursued. Much of the discussion of e-business either fails to address strategic issues or addresses only the narrow topic of strategies for electronic markets. It is our contention that internet technology has a large prospective influence on the broad range of strategy areas of the organization, that these are linked to the business processes and the impacts there, and that failure to address both simultaneously will undermine the firm's overall competitive position.

Business models

Much of the writing on e-commerce addresses numerous "new" business models or ways of conducting business activities to earn returns for shareholders. Indeed, such works consist largely of classifications and discussions of new variants enabled by the growth of electronic markets enabled by internet technology (Afuah and Tucci, 2003; Hartman and Sifonis, 2000; Hedman and Kalling, 2003; Siegel, 1999).

These are certainly valuable discussions. But, they are limited. Existing firms have existing business models as well. An internet-influenced world serves to create competitors for these existing business models, often utilizing electronic channels, which may, in some instances, prove competitively more attuned to the demands of customers. Changes in the technology may likewise serve to require modification of the existing business models of the firm. Under the worst of conditions, the change in technology may serve to destroy the viability of the current business model and put the

firm at risk. An example of the latter is the well-known situation of Encyclopedia Britannica where there has been difficulty in finding a viable revenue stream for the product in a digital world (Shapiro and Varian, 1999).

Emergent vs designed strategy in e-business

A view of strategy widely accepted as more "realistic" than a strict planning approach was introduced by Mintzberg (1987). He describes strategy as a pattern in a stream of decisions and argues that it is crafted rather than designed; while there is a designed intended strategy, it is likely that some of it will be unrealized due to errors in framing, changed conditions, and the like. Emergent strategies, unplanned responses by managers to events occurring, will also be undertaken. So the realized strategy of the firm is a combination of part of the intended (or planned) strategy and emergent (or unplanned) strategy.

In dealing with internet-centered technology, with its relatively rapid technology cycle, the world is clearly one of emergent strategy. Change is rapid and premises of planned actions may no longer hold by the time action must be taken. Technology changes and what was the best or leading approach may be rendered quickly obsolete. Consequently, flexibility is the order of the day and bureaucratic, rational strategy formulation may well be impossible. A firm moving toward becoming an e-business may find this world substantially different from the one it has known and the implications for both framing strategies and implementing them are important.

E-business and strategy levels

Strategy in organizations is often conceived as involving three levels. Corporate strategy addresses questions of the mix of businesses, relationships among them, and how value is added. Business strategy is concerned with the firm's gaining and using its competitive advantage in a market or industry. The interest of functional strategies is the activities in the basic operations of the firm (including cross-functional activities) and their effectiveness in support of the business strategies. There are considerable potential influences of internet technology on all of these levels that are present in an existing business prior its e-business migration.

Corporate strategy may be strongly influenced by internet-based technological changes in a variety of ways. The value situation relative to vertical integration may be modified either favorably or unfavorably depending upon the relative reductions of internal coordinating costs, external market transaction costs and supplier coordination effectiveness and costs. Forward vertical integration may well be rendered obsolete as the result of disintermediation of channels. Unrelated diversification will be impacted primarily through the effectiveness of control through use of new and redesigned business processes and information flows. Related diversification may be more strongly influenced either through enabling of value chain activity sharing, especially information maintenance and use, or through sharing IT-related skills now more commonly required by formerly different businesses.

On the business strategy level, influences occur in both shifts in industry structure and in competitive strategy. New industries are, of course, created by the technology. As discussed by Porter (2001) in his extensive review of the internet and strategy, there are a large number of potential impacts on all of the competitive forces in an industry structure. Information gathering and use, enabled by the internet, may shift the power

relationships with buyers and suppliers. Products or services may be redefined or homogenized through use of the technology. The basis on which buyers purchase the goods or services may change. The switching cost situation in the industry may well change as well (Shapiro and Varian, 1999).

In terms of competitive strategy, major changes are possible as well. The technology and its use may yield substantial cost savings in support of a cost leadership strategy. Differentiation may be enabled by increased information provision, such as development of specialized ancillary services or direct product or service configuration for the customer. But, with better customer information, the range of potential dimensions for differentiation may be narrowed. Among the most important influences is the potential ability to follow focus or niche strategies, which may no longer be geographically constrained and are therefore commercially viable. Finally, use of internet technology, which is both readily scalable and scale cost sensitive, to enable differentiation may make more possible a combination of cost leadership and differentiation into so-called best value strategies (Porter, 1985).

Functional strategy is the level most impacted by an e-business approach. As these strategies are about basic operations of the firm, they are achieved through the business processes. And changes in process, through use of the technology, shift the functional activity and thus the strategy. One might well conceive of a business process change effort as shifting functional strategy without regard to the business and corporate strategy. That result is both inconsistent and suboptimizing for the business.

Finally, one of the major effects of e-business is in enabling network or cooperative strategies which go beyond the individual firm to inter-organizational networks. Tapscott (2001), in his answer to Porter's article cited above, argues that the internet enables a new business architecture that he terms a business web, "...a system composed of suppliers, distributors, service providers, infrastructure providers and customers that uses the internet for business communications and transactions". He contends that this form is more innovative, efficient and profitable than the traditional organization form. Mowshowitz (1997) contends that the internet facilitates virtual organizations as organic networks, hybrid arrangements and value-adding partnerships with the essence or effect of traditional corporations but no apparent organizational identity.

E-business and competitive advantage

How will the advent of e-business influence competitive advantage? Applying a resources-based analysis to the topic yields some important considerations (Grant, 1991; Collis and Montgomery, 1995). What is being sought is a sustainable competitive advantage. And sustaining advantage based on internet technology will likely prove to be difficult given the lack of proprietary technology, rapid technology diffusion rate, and decreasing life cycles. As Porter (2001) points out, sustainable operational effectiveness advantage based on use of internet technology is an exceedingly difficult proposition, making strategic positioning of the firm more important. The knowledge base that comes from the experience of implementation and the firm capability in using internet technology in its processes and strategies may well provide a sustainable competitive advantage, however (Mata *et al.*, 1995). It is possible, as well, that the primary gain from an e-business transition is the maintenance of competitive parity

and the avoidance of a competitive disadvantage. In general, competitive advantage rests outside of the application of internet technology. Broad use of new technology to enable the firm's internal and external processes will change the size of the advantage and the competitive value of the advantage – both of which may be increased or decreased. In addition, the information provided may serve to permit development of further bases for advantage as technologies and buyers change.

It may be readily seen through this brief review that far from impacting only the processes of the firm, internet technology has a broad range of potential impacts on the strategy as well. Some of these would be induced at the functional level through making changes in processes and might be harmful to the overall strategic performance. The many possible influences, both positive and negative, of the technology change on the strategic interests and options for the firm must be addressed in any e-business implementation effort.

Organizational change and e-business

Organizations change for a variety of reasons – including as a response to environmental and economic pressures, to changes in the competitive environment and to new technologies. Organizational change refers to a difference, from any point in time to another later point in time, in the nature of the organization, its operations, or its character. Such change can occur incrementally, as a natural course of doing business, and is referred to as "evolutionary change". When this evolution is insufficient, there will be an intentional dramatic change, referred to as "revolutionary change" (Griener, 1972). Sometimes the change occurs suddenly and disruptively, most often due to a shift in the environment that was not anticipated, or in an evolutionary fashion, and is referred to as "unplanned change". Alternatively, such change can be anticipated and directed through incorporation into plans, budgets, hiring practices and new product development, and is referred to as "planned change".

The record of planned organizational change with regard to computer technology implementation has consistently shown problems in modifying organizational structures and practices – with the relationships between people and the technology often being cited as a major reason for the failure of such investments (Kling and Lamb, 2000; Clegg *et al.*, 2005). In a study of 300 US, Canadian and European firms by consultants Towers Perrin (2000), respondents identified the major issues for e-business implementation as being related to people, organization culture and organization structure, with more than 75 percent indicating that their firms lacked adequately skilled employees and 87 percent citing an inappropriate organization structure.

BPR and ERP, as discussed earlier, were attempts to use IT to radically alter business practice in which organization issues proved problematic. Fiedler *et al.* (1994) observed that the risks associated with attempting and failing with this business process approach included both structural risks (structural change, increased structural complexity and parochial ownership) and process risks (irreversibility of the change process, resistance to change and task ambiguity), As reported by McHugh (2000), such efforts were often viewed as failures, with 37 of 100 responsible executives interviewed about their ERP adoptions believing that they had no positive impact on the organization.

Edwards and Peppard (1994) conceptualize the organization itself as a process which converts capital, labor, information and energy into outputs, and consider the organization's strategy to be "the blueprint of this high level process". Consequently, any change in business processes will have an interaction effect on organization strategy, as well as involving a consideration of organizational culture, processes, structure and technology (Ascari *et al.*, 1995.) According to Chenyunski and Millard (1998), the entire (point? idea? benefit?) of reengineering is about bringing "… together business process redesign (BPR), IT, and to a lesser degree organization development (OD) to address corporate concerns for achieving breakthrough performance".

There is a substantial literature which examines organizations and IT generally. These efforts, which are beyond the scope of this article to fully review, were addressed primarily to the impacts of the introduction and use of traditional large-scale centralized information systems within larger businesses (Leavitt and Whisler, 1958; Pfeffer and Leblebici, 1977; Scott-Morton, 1991; Schwarz and Brock, 1998). Likewise, a number of authors have speculated upon the impacts of e-commerce and e-business on the future of organizations (Kanter, 2001; Tapscott, 1996).

A far smaller number of efforts have examined the management of organization change in the context of shifting toward e-commerce or e-business. Wargin and Dobiéy (2001) focus on the capacity for change while addressing resistance, leadership in the change efforts and corporate culture as critical elements to consider. Sharma (2001) likewise addresses the link between culture and e-business success. Jackson and Harris (2003) emphasize that the challenge in e-business organizational change is that, while e-business may require radical change in organization structure and culture and overcoming resistance to the efforts, the efforts must also recognize and preserve the value of the business's "old" business structure and processes. Wong (2000) proposes a conceptual model of organization design for e-commerce based on a review and synthesis of five organization design approaches – the sociotechnical systems approach, self-design, coherence design, the five-track approach, and the process approach. The sociotechnical systems approach to organization change for e-business, with its holistic view of the complex set of interrelated changes, has also been explored by Kling and Lamb (2000) and Clegg *et al.* (2005).

Finally, several authors have developed models for organization change to e-business that reflect consideration of the broad range of change in multiple aspects of the business that is required for e-business implementation. Earl (2000) describes a fairly simple idealized six-stage evolutionary model of e-business implementation that provides an agenda for evolving the business. A somewhat more complex model is advanced by Gardner and Ash (2003) that emphasizes the nonlinear and emergent nature of the required change and focuses on broad corporate intent and strategy, application of business models, and the role of an agent or moderator to enable the required change.

In sum, the new wave of technology, brought about in part by the internet, "…is synonymous with change – technological, organizational, and individual" (Schwarz and Brock, 1998, p. 69). E-business migration is a complex organization change, which involves the adoption of new e-enabled business processes and organization as well as resulting in the need to reassess strategy, by virtue of the use of technology changing both the nature of competition and the internal capabilities of the organization.

An e-business migration model

Business process, strategies and organization changes have been shown to be significantly impacted by adoption of internet-based technology broadly in a firm. Consequently, any migration of an existing firm to an e-business configuration must address these topics to be capable of successful implementation. While some attempts purport to address this migration, they are generally somewhat incomplete and preliminary, as described above, emphasizing only part of the puzzle rather than the totality of the concerns that must be addressed as in the prominent business model-centered effort by Weill and Vitale (2001).

The imperative to migrate to e-enabled technology has created a pattern of adoption over time. As experience with the technology has progressed, a number of definable stages in the approach taken toward such migration have emerged. Firms using these earlier approaches to the migration have not addressed all three concerns we have identified. A process model of e-business migration may be formulated, which does include them.

Stages of approach to e-business migration

Stage I: Technology-driven process approach. The first stage approach to e-business was driven by the technology: the technology made a process possible and therefore a business was created to take advantage of that process. This approach was predominantly oriented toward startup businesses that did not have to deal with an existing infrastructure or method of doing business. Often this approach did not consider market realities, and gave rise to the phrase "new economy", which referred to the notion that a start-up firm need not make a profit, but would be sold to someone else. Stage I did not work for existing firms that already had existing processes/systems, in part because of their existing, legacy systems.

Stage II: Legacy-limited process approach. The Stage II approach to e-business was still driven by the technology, but occurred as existing firms explored and adopted the technology. Implementation was limited by risk avoidance and legacy processes and systems. This approach attempted to focus on technology-enabled business processes which could be "added on" to the current processes, but without changing the fundamental nature of the existing business and processes. The propensity was to focus on the business processes only, without changing anything fundamental with regard to the rest of the business. In fact many existing firms formed separate businesses (or at least divisions or joint ventures), which followed completely different business strategies or even used different company names.

Stage III: Internet strategies and process approach. The Stage III approach to e-business expanded beyond attention exclusively to business processes and occurred as experience identified problems with the Stage II approach. In particular, Stage III added a focus upon internet strategies and business models that would take advantage of the internet. As issues of fulfillment and the need for internet technologies to be integrated into non-internet firms increased, problems arose in integrating e-business capabilities into the existing business. In turn, this led to problems regarding the fit between the new processes and the existing organization processes and organizational structure.

A stage IV model

In Figure 1, we propose a new model to address the difficulties found in earlier stages, especially Stage III, consistent with the view that e-enabling organizations requires addressing the totality of business processes, strategic concerns and organizational change (as outlined in earlier sections of this paper) in the adoption of the full range of developing internet technologies.

The model is best explained in terms of a group of interrelated tasks reflecting both the potential of the new technology and the organization situation and reality of the firm's current position. It is directed to producing an e-business implementation model reflecting the technology's impact on process, strategy, organization function, and the interaction among them.

Task 1: Determine potential e-enabled processes. In the early parts of the proposed stage IV migration analysis model, parallel tasks considering business processes and strategies are addressed. In the business process task, the set of possible e-enabled business processes relevant to the firm (including both new processes and changed current processes) and reflecting the current and near future states of internet technology are identified. These possible e-enabled business processes are then considered in the light of the current business processes of the firm, which may serve to limit the feasibility of their implementation in the organization. The result of this analysis is a set of potential e-enabled business processes reflecting both the technology available and the organizational reality in which they must be followed.

Task 2: Determine potential strategies. The strategy task parallels the process task in both time and structure. The set of possible strategies for the firm, reflecting the broad range of strategy options and considerations at all levels as discussed earlier, is defined. A significant input to this determination is the range of possible e-enabled business processes, which serves to define much of the scope of possible strategies. This set of possible strategies is then assessed from the perspective of the current strategies of the organization. The result of this task is a determination of potential strategies to be considered by the organization.

Task 3: Choice of e-business strategy and architecture. The choice of e-business strategy and architecture is the result of an interactive consideration of the potential strategies and potential e-enabled processes delineated in the previous tasks. This interaction is necessary to assure compatibility among the potential options, as well as to lead to an appropriate choice. The result of this task is a proposed set of new business processes and a proposed new strategy. These new processes and strategy will lead to changes in the organization either deliberate or induced. We suggest that a fully developed e-business architecture would also include the development of a plan for organization change to enable the intended processes and strategies to be put into place.

Task 4: E-business implementation. The implementation task involves the detailed articulation of activities needed to realize the new strategies and processes within the organization. If, as we propose, a deliberate organization change process is adopted, a detailed organization change plan would be developed here as well. It may well be that in the process of implementation, a determination, based on better information about feasibility of the proposals or about technological change, may be made that the intended strategies, business processes, and/or organizational changes are unable to be carried out fully. This determination would lead to a cycling back to task 3 and a

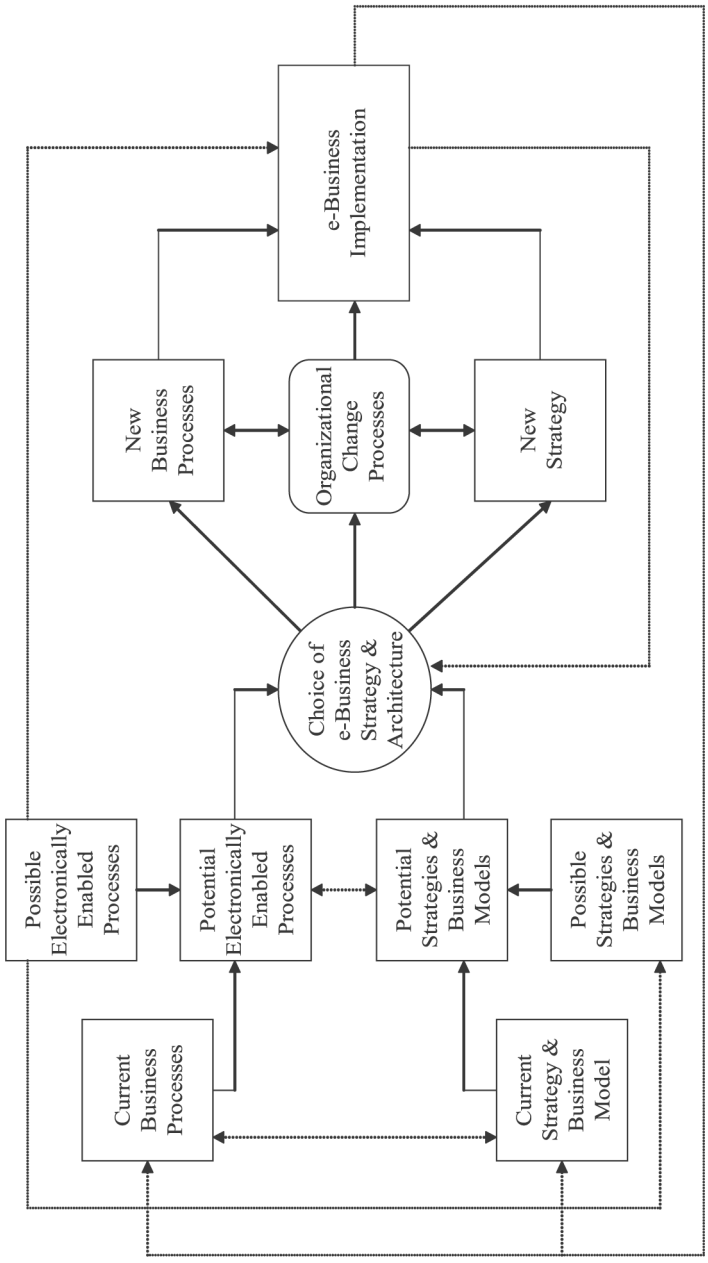

Figure 1.
A process model for e-business migration

re-evaluation of the proposals. Finally, the activities are carried through to a full implementation.

This overall process should not be thought of as a discrete one-time only set of activities. Rather, the firm must be constantly migrating to new states based upon changes in both technologies and markets. Consequently, this migration must be an ongoing activity in the organization and is reflected in the model through the feedback from the implementation to the current business processes and current strategies considered in the next iteration.

Ten myths of e-business migration

We have identified ten myths of e-business migration. We believe that the model presented here illuminates why they are inconsistent with effective e-business adoption. The myths have been placed in four groups based on the tasks identified in the model.

Technology/process myths

(1) E-business migration is solely a technology issue.

(2) It is possible to out-source the entire process.

(3) E-enabled processes can be isolated in the organization.

(4) Current business processes can remain unchanged.

E-business migration is a complex set of tasks with broad impacts on process, strategy and the organization. As such, while technology development can be outsourced, the process must be primarily internal. The changes, which are largely in business process, induce changes in other processes, strategies and the firm as a whole. The only way to isolate e-business processes is to build an entirely new organization.

Strategy myths

(5) The firm's strategies can remain unchanged in the effort.

(6) E-business technology can be integrated into the current business without strategic change.

E-business technology can change the nature and basis of competition in the firm's industry as well as the balance of capabilities within the firm. It also can change the costs and relationships between businesses and the nature and size of the firm's competitive advantage. These are clearly major strategic impacts. But all e-business adoptions work through modifying the firm's business processes, which necessarily leads to change in functional strategies at a minimum.

E-business choice myths

(7) E-business migration does not create organizational change.

(8) E-business migration adoption is a single-pass, sequential process to an implementation goal.

Choices in e-business migration, even if limited to technology, process and strategy, create organizational change. Planned organization change is preferable to unplanned change, due in part to obtaining buy-in by employees, and requires explicit

organizational choices to be made as well. Because of the scale of the tasks involved, the rapid evolution of technology, and better information as to feasibility as the adoption occurs, choices often need to be revisited and reevaluated.

Implementation myths

(9) E-business processes can be implemented under the direction of a single individual or department.

(10) Implementation of an e-business initiative is done only once.

Implementation of an e-business migration plan is too complex and far-reaching to be completed by a single individual or department; it is a pervasive shift in the perspective and operation of the firm. Moreover, because of the rapidly changing nature of the technology, e-business migration must be an ongoing activity of the organization.

Conclusion

E-business migration is a complex process involving technology, business process, strategy and organization change. It is an iterative process that takes place over time and changes both organization functions and outcomes. Throughout the ongoing process, the firm must reassess changes in the available technology, the competitive marketplace, and the internal structure and culture of the organization to assure an effective outcome. The challenge is to manage this required multidimensional change in a way that will encompass all those factors needed to permit an effective e-business effort. The model presented is a step in enabling this migration to occur more successfully.

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