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Journal of Organizational Change Management

Organizational transformation and e-business implementation

Guest Editors: Jeffrey Gale, Terence Krell and Dolphy Abraham





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Journal of Organizational Change Management

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Guest Editors

Jeffrey Gale, Terence Krell and Dolphy Abraham

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Introduction: toward understanding e-business transformation

Jeffrey Gale and Dolphy Abraham Loyola Marymount Unversity, Los Angeles, California, USA

Abstract

 $\ensuremath{\textbf{Purpose}}$ – To introduce the special issue on organizational transformation and e-business implementation.

Design/methodology/approach - Provides a brief review of the papers within the issue.

Findings – The organization transformation brought on by the internet and the adoption of e-business approaches are fertile ground for continuing work. Virtually, all aspects of the structure and process within the organization are affected.

Originality/value - Provides a summary of the perspectives considered within the issue.

Keywords Internet, Electronic commerce, Organizational change

Paper type Viewpoint

About the Guest Editors The late Terence C. Krell was a member of the Journal of Organizational Change Management Editorial Advisory Board. A former corporate executive with MBA and PhD degrees from UCLA, Dr Krell taught at UCLA; Loyola Marymount University; California State University, Northridge; John Carroll University and Western Illinois University during his academic career. Dr Krell wrote or co-authored over 100 papers and conference presentations in various areas of management. Prior to his death, his research focus was on the management of technology and the use of the internet to improve the effectiveness of teaching.

Dr Jeffrey Gale is Professor of Management at Loyola Marymount University in Los Angeles, where his primary teaching and research are in the areas of strategic management and international strategy. He was formerly on the faculties of the University of Washington and the University of Texas at Dallas. Dr Gale holds SB and SM degrees from the Sloan School of Management at MIT and a PhD from the Anderson Graduate School of Management at UCLA. In addition, he holds a JD from UCLA. Widely published and active in professional and academic organizations, Dr Gale has also been an active consultant on strategy and general management issues and has twice served as an outside director. He is a member of the California Bar. E-mail: jgale@lmu.edu

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The Guest Editors would like to thank Ms Julane Marx for copyediting the papers in the issue.

Understanding e-business transformation

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This issue arrives at a critical juncture. It is roughly a decade since organizations started what became a widespread adoption of internet-based technologies. During this decade, we have witnessed a boom followed by a resounding bust as individuals and organizations tried to capitalize on this set of technologies and the underlying internet infrastructure. During the time period, various new "business models" have been applied; some have succeeded while many more have failed. However, it is clear that the internet and internet-based technologies have become the mainstay of information systems for organizations and, what is termed an e-business approach to doing business – moving beyond using the technologies solely for commercial transactions to integrating them throughout the organization and its functioning – is here to stay. The time is therefore, ripe to study how these technologies and the e-business approach have affected the organization and how organizations have reacted to such technologies.

Organizations use e-business approaches to support business goals and objectives, or in reaction to customer expectations or changes in other competitive forces. The change in business processes as a result of using e-business approaches and systems causes a change in the nature of work done within organizations and how a business structures itself to get the work done. Market pressures force organizations to be more flexible and adaptive. The changes in organizational structure also mandate a change in the way decisions are made and how information is used in the decision-making process. And, as Tapscott *et al.* (2000) have argued, the technology enables functioning in tight intra-organizational forms previously ineffective or unavailable. As organizations better understand the role of information and internet-based technologies, they are able to specify internally driven changes to operations and management ultimately leading to changes in how they serve their customers. In short, managers may embrace the e-business approach as a result of external pressures, but once they understand its true capabilities, they are able to define new directions for the organization and new approaches to capitalize on these internet-based technologies.

Thus, the spread of this technology, and the change in the world of organizations that has resulted, demand that we develop an understanding of the nature of the organizational change involved. The literature addressing the change has been, however, relatively limited. Most writing on e-business has emphasized the technology and potential new business models. Examinations of organization change and e-business have been few and far between.

This journal has recognized the need to address the subject and, in the paper by Jackson and Harris (2003), provided an appreciation of some of the complexity of the change involved and the difficulties in balancing the value of traditional approaches with adopting new ones. In this issue, the authors of the five papers continue the process of developing our understanding of organization change in an e-business context.

The first paper by Krell and Gale, "E-Business migration: a process model", goes beyond the often simplistic discussions of moving to an e-business approach by framing a new process model for the migration of the traditional firm to an appropriate e-business strategy and origination architecture. This complex model addresses the multiplicity of factors, including strategy, business models, business processes and organization structures that must be addressed to provide an effective transformation

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effort. The authors then use the model as a basis for dispelling a number of myths reflected in current e-business migration and implementation efforts.

In "The changing nature of work in the age of E-Business", Landry, Mahesh and Hartman consider the potential impacts of the kind of pervasive systems enabled by the technology and contemplated by the e-business approach upon organizations, employees, managers, and the nature of jobs and work. Integrated systems can offer seamless data and process integration over diverse information systems. All routine business processes have the potential to be automated and should require little management. Managers will be needed to handle exceptions, engineer new process development, and build customer relationships. Managers will probably be needed to support smaller, flexible, fluid groups of highly skilled, entrepreneurial, consultant-like employees, who will often possess far greater levels of skill in their fields of expertise than the manager. They express concerns about potential problems and especially widespread loss of jobs, and recommend cross-disciplinary examination and research into possible impacts.

The work of Dubé, Bourhis and Jacob in their piece, "The impact of Structuring characteristics on the launching of virtual communities of practice" examines the development of virtual communities of practice (VCoP), a new form of organization structure and process enabled by internet technology. Their work investigates how 14 organizations attempted to implement 18 VCoP's. The results show that the environment, the relevance of the VCoP's objectives to its members' daily work, and the degree to which the VCoP is embedded in the organization are the three structuring characteristics most likely to explain the success or failure of a VCoP at the launching stage.

Pateli and Giaglis' paper, "Technology innovation-induced business model change: a contingency approach" explores the use of scenario planning to develop inter-organizational business models and understand the change from current organizational practice. It draws on a number of theoretical perspectives to propose a methodology that identifies scenarios and generates contingencies for building technology-enabled business models through partnerships. The validity and utility of the methodology are demonstrated via a multinational case study of mobile business innovation in the exhibition industry. Results show that scenarios are powerful tools for business change that allow organizations to identify and explore feasible and desirable cooperation schemes under different firm-specific and industry-related conditions, thus reducing the inherent risk of business model change.

Finally, the work of Lin and Lu, "Adoption of virtual organization by Taiwanese electronics firms: an empirical study of organization structure innovation" looks at an inter-organizational e-business system and the organization characteristics related to success in functioning within it. The paper presents an empirical study that examines virtual organizations and associated determinants of their successful adoption in the Taiwanese electronics industry. Applying information technologies to innovate organization structures, the virtual organization structure is effective when facing technological change. The findings of this research reveal significant impacts of individual and organizational factors, but no effect for environmental variables on virtual organization adoption.

The organization transformation brought on by the internet and the adoption of e-business approaches is fertile ground for continuing work. Inter- and Understanding e-business transformation

JOCM 18,2	intra-organizational structures are created and impacted. Virtually, all aspects of the structure and process within the organization are affected. Power within the organization is shifted and jobs are changed or eliminated. Multiple approaches to organization change, some of which involve and empower those impacted, may be available, and multiple outcomes may be possible as well. There is much to understand
116	and ponder. The work here is but a start.

References

- Jackson, P. and Harris, L. (2003), "E-business and organisational change: reconciling traditional values with business transformation", *Journal of Organizational Change Management*, Vol. 16 No. 5, pp. 497-511.
- Tapscott, D., Ticoll, D. and Lowy, A. (2000), *Digital Capital: Harnessing the Power of Business Webs*, Harvard Business School Press, Cambridge, MA.

In memoriam

Dr Terence Krell, one of the Guest Editors of this special issue and an Editorial Board Member and frequent contributor to the *Journal of Organizational Change Management*, fell ill last year and passed away in October 2004. This issue and its result are largely the reflection of his vision. He will be greatly missed by the *JOCM* community. We dedicate this issue to his memory. The Emerald Research Register for this journal is available at **www.emeraldinsight.com/researchregister**



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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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JOCM 18,2 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

E-business and the business process perspective

implementation efforts.

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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.

address a number of myths reflected in current e-business migration and

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 vielded 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

E-business migration: a process model 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

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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 E-business migration: a process model 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

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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. E-business migration: a process model 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.

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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.

E-business migration: a process model

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

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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

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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.

References

- Afuah, A. and Tucci, C.L. (2003), *Internet Business Models and Strategies*, 2nd ed., McGraw-Hill, New York, NY.
- Ascari, A., Rock, M. and Dutta, S. (1995), "Reengineering and organizational change: lessons from a comparative analysis of company experiences", *European Management Journal*, Vol. 13 No. 1, pp. 1-30.
- Camp, R.C. (1995), Business Process Benchmarking, ASQC Quality Press, Milwaukee, WI.
- Chenyunski, F. and Millard, J. (1998), "Accelerated business transformation and the role of the organization architect", *Journal of Applied Behavioral Science*, Vol. 34 No. 3, pp. 268-85.
- Clegg, C.W., Chu, C., Smithson, S., Henney, A., Willis, D., Jagodzinski, P., Hopkins, B., Icasati-Johanson, B., Fleck, S., Nicholls, J., Bennett, S., Land, F., Peltu, M. and Patterson, M. (2005), "Sociotechnical study of e-business: grappling with an octopus", *Journal of Electronic Commerce in Organizations*, Vol. 3 No. 1, pp. 53-71.
- Collis, D.J. and Montgomery, C. (1995), "Competing on resources: strategy in the 1990s", Harvard Business Review, Vol. 73 No. 4, pp. 118-28.
- Earl, M.J. (2000), "Evolving the e-business", Business Strategy Review, Vol. 11 No. 2, pp. 33-8.
- Edwards, C. and Peppard, J.W. (1994), "Business process redesign: hype, hope or hypocrisy?", *Journal of Information Technology*, Vol. 9, pp. 251-66.

E-business migration: a process model

JOCM 18,2	Fiedler, K.D., Grover, V. and Teng, J.T.C. (1994), "Information technology-enabled change: the risks and rewards of business process redesign and automation", <i>Journal of Information Technology</i> , Vol. 9, pp. 267-75.
	Fingar, P., Kumar, H. and Sharma, T. (2000), <i>Enterprise E-Commerce</i> , Meghan-Kiffer Press, Tampa, FL.
130	Gardner, S. and Ash, C.G. (2003), "ICT-enabled organizations: a model for change management", <i>Logistics Information Management</i> , Vol. 16 No. 1, pp. 18-24.
	Gloor, P.A. (2000), Making the E-business Transformation, Springer, Berlin.
	Grant, R. (1991), "The resource-based theory of competitive advantage: implications for strategy formulation", <i>California Management Review</i> , Vol. 33 No. 3, pp. 114-35.
	Griener, L. (1972), "Evolution and revolution as organizations grow", <i>Harvard Business Review</i> , Vol. 50 No. 4, pp. 37-46.
	Hammer, M. and Champy, J. (1993), <i>Reengineering the Corporation</i> , HarperCollins, New York, NY.
	Hartman, A. and Sifonis, J. (2000), Net Gain, McGraw-Hill, New York, NY.
	Hedman, J. and Kalling, T. (2003), "The business model concept: theoretical underpinnings and empirical illustrations", <i>European Journal of Information Systems</i> , Vol. 12, pp. 49-59.
	Jackson, P. and Harris, L. (2003), "E-business and organizational transformation: reconciling traditional values with business transformation", <i>Journal of Organizational Change</i> <i>Management</i> , Vol. 16 No. 5, pp. 497-511.
	Jayachandra, Y. (1994), Reengineering the Networked Enterprise, McGraw-Hill, New York, NY.
	Kanter, R.M. (2001), <i>Evolve: Succeeding in the Digital Culture of Tomorrow</i> , Harvard Business School Press, Cambridge, MA.
	Kling, R. and Lamb, R. (2000), "IT and organizational change in digital economies", in Brynjolfsson, E. and Kahan, B. (Eds), <i>Understanding the Digital Economy</i> , MIT Press, Cambridge, MA.
	Leavitt, H. and Whisler, T. (1958), "Management in the 1980s", <i>Harvard Business Review</i> , Vol. 36 No. 6, pp. 41-8.
	Malone, T.W., Crowston, K.G. and Herman, G.A. (2003), Organizing Business Knowledge: The MIT Process Handbook, MIT Press, Cambridge, MA.
	Mata, F.J., Fuerst, W.L. and Barney, J.B. (1995), "Information technology and sustained competitive advantage: a resource-based view", <i>MIS Quarterly</i> , December, pp. 487-505.
	Mintzberg, H. (1987), "Crafting strategy", Harvard Business Review, Vol. 65 No. 4, pp. 66-75.
	Mowshowitz, A. (1997), "On the theory of virtual organization", Systems Research and Behavioral Science, Vol. 14, pp. 373-84.
	Norris, G., Hurley, J.R., Hartley, K.M., Dunleavy, J.R. and Balls, J.D. (2000), <i>E-Business and ERP</i> , Wiley, New York, NY.
	Pfeffer, J. and Leblebici, H. (1977), "Information technology and organizational structure", <i>Pacific Sociological Review</i> , Vol. 20 No. 2, pp. 241-61.
	Plotkin, H. (1999), "ERPs: how to make them work", Harvard Management Update, 3/4 March.
	Porter, M.E. (1985), Competitive Advantage, Free Press, New York, NY.
	Porter, M.E. (2001), "Strategy and the internet", Harvard Business Review, Vol. 79 No. 3, pp. 63-78.
	Schwarz, G.M. and Brock, D.M. (1998), "Waving hello or waving good-bye? Organizational change in the information age", <i>International Journal of Organizational Analysis</i> , Vol. 6 No. 1, pp. 65-90.

Scott-Morton, M.S. (1991), The Corporation of the 1990s: Information Technology and Organizational Transformation, Oxford University Press, Oxford. Shapiro, C. and Varian, H. (1999), Information Rules, Harvard Business School Press, Boston, MA	E-business migration: a process model
Sharma, S. (2001), "Back to basics!' The link between organizational culture and e-business success", <i>Strategic Direction</i> , Vol. 17 No. 10, pp. 3-7.	•
Siegel, D. (1999), Futurize Your Enterprise, Wiley, New York, NY.	131
Tapscott, D. (1996), The Digital Economy: Promise and Peril in the Age of Networked Intelligence, McGraw-Hill, New York, NY.	

- Tapscott, D. (2001), "Rethinking strategy in a networked world", *Strategy* + *Business*, No. 24, pp. 1-8.
- Towers Perrin (2000), The Internetworked Organization Survey, Towers Perrin, New York, NY.
- Wargin, J. and Dobiéy, D. (2001), "E-business and change: managing the change in the digital economy", *Journal of Change Management*, Vol. 2 No. 1, pp. 72-82.
- Weill, P. and Vitale, M.R. (2001), *Place to Space: Migrating to E-business Models*, Harvard Business School Press, Cambridge, MA.
- Wigand, R.T. (1997), "Electronic commerce: definition, theory and context", *The Information Society*, Vol. 13 No. 1, pp. 1-16.
- Wong, S. (2000), "Managing the organizational aspects of electronic commerce", Human Systems Management, Vol. 19, pp. 49-59.

Further reading

- Lee, J., Pentland, B., Dellarocas, C., Wyner, G., Quimby, J., Osborn, C.S., Bernstein, A., Herman, G., Klein, M. and O'Donnell, E. (1999), "Tools for inventing organizations: toward a handbook of organizational processes", *Management Science*, Vol. 45 No. 3, pp. 425-43.
- Porter, M.E. (1980), Competitive Strategy, Free Press, New York, NY.



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The changing nature of work in the age of e-business

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Abstract

Purpose – This paper reviews recent discussions in the information technology (IT) and management literatures in order to consider their implications and to make a series of predictions about organizational life in the coming e-business era.

Design/methodology/approach – A wide variety of recent discussions, ranging from comments by political/governmental figures to scholarly reports in the academic literature, are reviewed to consider their implications for the structure and shape of jobs and the job market.

Findings – The review provides evidence that developments in IT suggest that significant levels of job loss will occur in routine jobs, coupled with a pronounced movement towards a job market of flexible, fluid groups of highly-skilled, entrepreneurial, consultant-like employees.

Practical implications – Should this transition take place, there will be little place in the coming workforce for low-skilled employees and a significant decrease in the overall size of the workforce. The jobs which remain will be those, which by their very nature, are creative and cannot be automated. Managers, governmental policy makers and the workforce in general will need to consider these implications.

Originality/value – Discussion and debate of the prospects need to begin immediately. This paper represents an effort to begin this process.

Keywords Work design, Internet, Knowledge management, Change management, Electronic commerce **Paper type** Conceptual paper

The current job market

Work has radically changed with the infusion of new technologies. An example of this is Verizon's call center voice operators. The operator on the other end of the phone is polite, curious, remembers where you left off if your call was interrupted, and can check your telephone line on the spot (Anthes, 2004). If the problem cannot be fixed on the phone, a technician is scheduled and dispatched. Technology enables all of these services to be handled in one call without the customer being forwarded from department to department. There is only one catch; the operator on the phone is not a person. It is an intelligent speech recognition application that can communicate in plain conversational text and is much more advanced than the standard "press or say 1" voice response units (VRU). Verizon is not the only company employing these technologies that are replacing jobs with technology. In 2004, AAA of Minnesota reported that they had reassigned 20 percent of their call center using intelligent VRU technology, saving \$2 per call and \$200,000 per year.

This type of job replacement is not limited to 2004 technologies. In the fall of 2003, newspaper headlines reported that the US has experienced a steady loss of jobs over a seven-month period, culminating in a loss of 93,000 jobs in August 2003 (Zuckerman, 2003). While the job market showed some signs of recovery in the last quarter of 2003, economists continued to find it difficult to reconcile economic growth with lower job numbers by January 2004 (Uchitelle, 2004). Studies have shown that, while new jobs opened up in 2004, the wage gap between high- and low-paying jobs widened, and



Journal of Organizational Change Management Vol. 18 No. 2, 2005 pp. 132-144 © Emerald Group Publishing Limited 0953-4814 DOI 10.1108/09534810510589561 many jobs were not being replaced (Wessel, 2004). Especially troubling was the recognition that losses have continued to occur during a period when the economy has been making gains as reflected in statements such as that of a Federal Reserve Board Governor "I admit that I don't fully understand the sources of this conservative behavior on the part of company management, and for that reason, I cannot be entirely confident that caution will not continue to predominate in the executive suite." (The Federal Reserve Board, 2003).

In contrast to such temporary loss perspectives, Groshen and Potter (2003) have proposed that permanent shifts in the nature of work throughout the economy have caused this economic recovery to produce job losses rather than gains. In an examination of previous recessions, they show that, where there is no structural change in the economic system, employers will quickly re-hire employees to previously-existing positions when the economy recovers, but if there are structural changes, the new jobs needed when the economy expands again are so different from the pre-existing jobs that neither employers nor employees are ready for re-hiring.

This paper focuses on the impact of pervasive information technology (IT), which we will define below, on the jobs available in an organization in the era of electronic business (e-business), and suggests that technological shifts may be bringing about structural change. If this is the case, what we may be observing, as businesses do not re-hire, is not caution, but rather the recognition by business that workers in certain kinds of jobs are simply no longer needed. We suggest the possibility that what the executive suite is really saying is that much of the old workforce is no longer required to support productivity gains, and a different set of skills are necessary to utilize the new technology effectively. While current workers are not prepared for these new jobs, employers are also likely unaware of what skills are necessary for the coming jobs, and even what these jobs may be. Moreover, is it possible that job loss will continue and even accelerate in the future? Are the types of productivity gains through the intensive use of IT documented in studies (Stiroh, 2001) the reason for this job loss with growth? This paper explores these possibilities from the perspective of the pervasive information age.

The age of the information-empowered employee

Structural change

Over the last 30 years we have moved from an industrial society to an information society. Note that for purposes of this discussion, the aspects of the industrial revolution and the creation of an industrial society, which will be examined are those dating from the early 1700s to the period immediately after World War II (note, however, that Bell (1976), Wren (1979), and others recognize that the industrial revolution itself had its origins considerably earlier). With the dawn of the computer era following the war, there has been an accelerating shift to an information-based society and we have seen the dawn of the information age. Daniel Bell (1976) was among the first to note this shift from manufacturing to services, the growing importance of knowledge and "science-based" businesses, and the increasing power of "technical elites" in a post-industrial society. Common to both the industrial revolution and the information revolution is a massive introduction of technology. During the industrial revolution, there were periods of extremely high technology infusion and, in the context of our previous discussion, structural change. The steam engine and the locomotive are seen by Drucker (1999) as two industrial-revolution technologies that

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drastically changed the way the world worked. What is new about the infusion of technology in the Information Age as compared to the industrial age is its focus. Industrial-age technology focused on products as the output. Information-age technology focuses on information as the output.

Electronic commerce (e-commerce) has been defined as business that is conducted over the internet using any of the applications that rely on the internet (Webobedia, 2004). The broader term of e-business applies to businesses that make significant use of applications that rely on electronic network-based technologies. These technologies include e-mail, instant messaging, online shopping carts, XML-based communications, web services, wireless LAN connectivity, and embedded devices. Collectively, these technologies connect employees, partners, and customers to one another anytime, anyplace and create a computer-mediated communications (CMC) environment that breaks down traditional geographic limitations. CMC is any communication where the computer is the medium for conversation and has recently been considered an alternative to face-to-face communications. During the current period of rapid change, the initial e-commerce boom has faded and many of the dot-coms have folded, but e-business - which, for purposes of our discussion, centers upon the use of pervasive IT to manage the firm – has remained. Thus, the shift appears to be from e-commerce, rather narrowly defined as the buying and selling of goods and services electronically, to the broader sense of e-business and to the use of information technologies, and the internet in particular, to change the enterprise and adapt to a rapidly-evolving technology.

The information-empowered employee, whom we will term the IE-employee, is one who has access to corporate and relevant external information via the network at all times, and is involved in supporting business processes permeated by IT. This employee will transact and manage business processes through integrated information systems. These systems will extend beyond single business entities and typically span the value chain. Access to these systems will be via pervasive computing technologies. A pervasive computing system is defined as one that offers secure, robust, real-time, seamless universal access to data via a wide array of devices (NIST, 2002). Pervasive computing puts computing power in the hands of all employees, available wherever it is needed. Integrated information systems. IE-employees can access data, obtain relevant information, and tap into stored knowledge to complete their tasks.

Redefining work

Are the concepts of jobs and work in transition? Bridges (1994) points out that the traditional job concept is, in reality, quite recent. It was created during the onset of the industrial revolution to provide the human capacities needed to feed the factories. Producing a standardized product as efficiently as possible was the primary concern, and under Taylor (1911), in his *Principles of Scientific Management*, the emphasis was upon finding the one best way to perform every segment of a fragmented, routinized job. The creation of the job brought about a profound change on how society lived and worked. In a move away from family work circles and trades that were passed down from one generation to another, formal training in standard procedures was created. Under scientific management, it is important to note that not only are procedures to be done in a standard, one-best-way format, but also that the job itself becomes narrow and is only a part of the total process – an idea exemplified by the assembly line (Wren, 1979).

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Participation by and empowerment of workers was discouraged under scientific management. Wirth (1992) discusses the idea that, while we in this country have lived in a democratic society, democracy has had no place in the traditional American workplace. The modern factory and many lower-level clerical jobs are based on a fixed time schedule, strict division of labor, and close supervision. In the service sector, many businesses have applied the principles of scientific management to improve productivity and to permit the employment of low-skilled employees. The hamburger flippers of the industrialized service sector are managed like their factory counterparts. Thus the American work force has continued to be run for the most part in the same way as advocated by Taylor (1911) and scientific management. In an era of pervasive IT, will close supervision become a thing of the past? While proponents of e-business have suggested that work would enter a utopian era with low central control, in reality IT has permitted managers to use a higher degree of micro-management over wider spans of control. Is a dual system dominated by a "technical elite" as noted by Bell (1976) emerging, with some jobs that are intensely monitored using technological tools, while other newly-created jobs allow significant creative freedom? Today's lower-level job will be eliminated and replaced by a much smaller number of more-intensely-monitored jobs.

The new job and the new process of managing

Moreover, the new creative jobs that will open up are likely to require significantly more skills and very different abilities. In a knowledge-based era, work cannot be designed in a cookie-cutter function, with prescribed, interlocking pieces, and there may be no preconceived notion of how to complete the work. Furthermore, managers in traditional jobs knew more about the job than their employees. In the future, the highly specialized employee doing work, which is not well defined will know more about the job than the manager. Owing to the fact that more jobs will be knowledge jobs, and the ability to interact with and even modify some aspect of a complex information system will be required, most managers will be less competent in the job than their employees. Unlike the factory setting where managers by virtue of seniority and prior education knew more about the job than the employees, the new manager is likely to know less about the job than the employee, and function in a more democratic setting. Additionally, since managers will know less about highly specialized tasks than their skilled employees, they will lack the ability to engineer the one best way to do work (Adar, 2002; Bridges, 1994; Drucker, 1999; Wirth, 1992). Moreover, it seems likely that such new jobs cannot be designed, evaluated, or even managed using traditional management techniques, since they are not jobs in the traditional sense. Instead, under this new notion of the job, each employee may have his or her own way to complete the work and workers may resist autocratic management attempts to control what is being done (Adar, 2002). Note also that such changes should lead to corresponding changes in traditional employee education, with less emphasis on teaching facts and rules that are necessary for the workplace and more emphasis on providing the foundation for stimulating ideas for creative problem solving.

Job eliminations

Well-defined jobs of the factory era can all potentially be automated in a highly-integrated, IT-intensive environment. This movement toward automation applies not only to jobs requiring physical tasks but mental tasks as well. In fact, since the computer is well-suited to number-crunching, decision analysis, and with The changing nature of work

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improvements in intelligent technologies such as neural networks and pattern recognition, if it is possible to clearly define what is to be done and map the business process thoroughly, over time, the process can be completely automated, leading to the elimination of the job itself. Note that this phenomenon is well underway not only in the case of the automated assembly line but also in such defined service-sector jobs as telephone operator, service station attendant, grocery cashier, and bank teller. Moreover, most administrative jobs typically involve handling information, and all such positions are impacted by integrated information systems and ubiquitous access to information. The jobs involved in purchasing, payroll processing, benefits planning, and accounting are only a few of the job types that will be impacted by - and potentially eliminated by – technology. Many customer-contact jobs are changed by pervasive technologies as well. Jobs from airline ticket reservations to industrial sales and customer support will change and most appear likely to be eliminated. David (1990), in his classic article on the need to adopt structural changes in the enterprise to internalize the effect of IT, showed that many existing tasks would have to change completely before there would be real productivity gains from IT. From this perspective, a large part of the reason for the current jobless recovery is that improvements in business processes enabled by pervasive IT have eliminated jobs and significantly altered the remaining positions.

The rise of the creative class

As the well-defined jobs are eliminated, the jobs that will continue to be done by humans will be those that cannot be automated, precisely because they are not well defined and cannot be well defined. Design and research activities, as well as tasks requiring a high degree of human contact, are examples of this sort of work. Moreover, there is recognition that a growing number of more influential members of the workforce, whom Florida (2002) terms the creative class, create much of the wealth in the economy. He estimates this group to be composed not only of IT employees but of managers, writers, and many others whose work primarily entails use of information, and proposes that these employees are members of a nearly 40 million-strong group that give the economy much of its momentum. While employees in the service class outnumber this group, and are estimated by Florida to number about 55 million, he argues that economic growth is dependent upon effectively managing the creative class.

In turn, the advent of a creative-class workforce may call for a revisiting of participation and empowerment as constructs. Note that, in traditional terms, we would describe the emerging new creative-class jobs as empowered. But empowerment may not necessarily be the right answer for the new employee and job. Many people do not want what they perceive as more work for the same pay. In Mintzberg's (1998) terms, people in the 21st century want to be challenged and inspired but not necessarily empowered, especially if empowerment is a code word for increasing responsibility without a commensurate increase in rewards. Given this caveat, could the principles of empowerment serve as the basis for designing and managing jobs in the information era? This is probably doubtful. In the pervasive-information-age job, workers in the categories described, may very well be more likely to expect full control over job-related decisions, rather than mere participation.

However, while the employee will maintain control over the job, and not follow strict guidelines provided by managers, this does not mean that the job will be defined entirely by the employee. Ubiquitous computing allows the employee to link to the

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workplace anytime, anyplace. Potentially, then, such linkages mean that the job will follow the employee wherever he or she goes. In today's terms, we observe that a healthcare professional on call can be reached by patients and those needing service not just at the office, but at home, and even on vacation. Hence, we may see a situation emerge, where the nature of the job, the work required for the job, and perhaps the customer or stakeholder - including both external customers and internal organizational ones - will define the work hours, and not the manager. Ubiquitous computing and integrated information systems may well stretch out, rather than shrink, job hours, and the strict defining line between work and home may be obliterated. Supporting this line of argument, Roach (1998) has argued that much of the gain in productivity documented from the use of IT is not real, and is the result of miscalculation of labor input. He argues that in the industrial era, with defined workplaces and union rules, work hours were strictly calculated, while in the amorphous workplace of the IT era, employees put in many hours while traveling, at home, and even on vacation that do not figure into the calculations of productivity. Thus some of the recent productivity gains may be occurring as a result of undervalued work hours.

Moreover, this lack of definition between work and non-work potentially creates a need for transitions between work and home roles, and can complicate both facets of employee life. Ashforth *et al.* (2000) discuss the need for role exit and rites of separation to support this transitioning. In the IT-enabled seamless world, where work and play interact continually, there may be a new need for business training to help employees distinguish among these states through appropriate rites of separation. Compounding the tension is the recognition that today's employees want a balance between personal and work lives as a critical component of job satisfaction.

Implications for managers and management

Mintzberg (1998) has suggested that a shift to expertise on the part of the employee rather than the manager will mean that managers will need to adapt to a new role, more similar to that of an orchestra conductor rather than a shift supervisor, straw boss, or even coach, the role that some recent theorists have prescribed for managers (Whetton and Cameron, 1998). Others (Bridges, 1994; Drucker, 1999) have suggested that most, or even all, management jobs, especially at the middle-management level, will eventually disappear. Potentially first to be eliminated will be those managerial jobs whose primary function is to move information through a chain of command. Moreover, from this perspective, the traditional manager will no longer be needed by specialist employees who have control over their jobs and function more like outside consultants with expertise in their areas than employees in the traditional sense. Those managerial jobs that remain may have an extremely broad span of control. Historically, Wren (1979) notes that the appropriate span of control has been fairly narrow, at roughly seven to ten employees to one supervisor. Management theorists were intrigued when, for example, findings from the King Tut excavations revealed that the ancient Egyptians adhered to this formula. But an enhanced ability to review meaningful data from many workers in a real-time context may mean that the manager can effectively supervise many more employees than has previously been considered possible. Reflecting the perspective of consulting firm McKinsey, Byrne (2000) points out that technology has allowed Bank of America to manage a \$700 billion bank as effectively as it once managed a \$7 billion bank.

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Alternatively, however, contingency theorists have pointed out that the number of people supervised should be related to the complexity of the work, with those who are supervising complex tasks supervising fewer workers. From a theoretical perspective, Van Fleet (1983) has listed seven factors determining the appropriate span of control. Of these, job complexity and coordination complexity appear related to the new job and the new managerial demands as we have discussed them and are seen by Van Fleet as reducing the span of control.

Will the need for more supervision in the case of complexity become the rule in the pervasive information age? A clear pattern has not yet emerged. Studies have noted that changes in the span of control vary by industry (Davison, 2003), and have found a flattening of the firm's structure, suggesting a broader span of control (Rajan and Wulf, 2003). Note, moreover, that the Van Fleet perspective assumes that the manager is needed to understand and coordinate the job, while the discussion to this point has suggested that managers may not be needed for either function. Additionally, in Van Fleet's analysis, job similarity, employee proximity, employee ability, employee empowerment, and management ability increase the span of control, and given the level of employee job control suggested, at least the empowerment feature also argues for a broader span of control, because the jobs that remain, or evolve from the pervasive system, are highly dissimilar and not controlled by the manager. As noted, in a closely linked information system, routine queries and reports are automatically generated and best-practice business processes are embedded in the system. Specialized and autonomous employees may be needed to discover new patterns in data, improve processes, or handle exceptions to established rules. Overall, with the associated increase in employee autonomy and expertise, there may be a lowered need for supervision. A guarded guess at this point is that span of control will increase, possibly radically, and that this increase will further reduce the need for traditional managers.

The work of the information-empowered employee

Drucker (1957) in his groundbreaking Landmarks of Tomorrow defined innovation as the systematic, organized leap into the unknown. The shape and feel of jobs of the future represent one such unknown, and at best we can consider the possibilities, which have been suggested. Zuboff (1984) finds that organizations use one of two approaches as work processes are changed and augmented by technology, leading to the idea that work can either be automated or informated. Automated systems simply involve replacing manual tasks with computer processes. Informating involves creating systems that process knowledge and share it within the organization using new techniques. As Drucker (1999) recently pointed out, the real transformations brought about by technological innovation are not simply permitting existing activities and functions to be performed more rapidly or efficiently, but rather meaningful transformation occurs when the processes themselves become different and, for both Drucker as well as for Thurow (1999), when the functioning of the economic system as a whole is transformed. Transformations of this type took place during the industrial revolution with the development of the steam engine and the locomotive. Equivalent transformations during the information revolution include the development of e-commerce, with the addition of e-commerce to traditional brick-and-mortar organizations as well as, in a broader sense, the development of e-business, as the shape and management of the entire organization is radically

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transformed. The networked organization, which achieves competitive advantage by outsourcing all of its non-core business processes, is an example of e-business implementation that will transform the economic landscape (Byrne, 2000).

Drucker (1957) pointed out that automation, as the rapid substitution of work by knowledge and concept for work by human hands, is a first impact of the educated society, raising the prospect that as society became more educated, workers would be less likely to want physical labor jobs. In the society envisioned by Drucker, the only real capital is knowledge. Knowledge organizations are different from traditional organizations in that innovations are the most important input and human intellect is the most important capital (Adar, 2002). What is suggested is that, as the 21st century dawns, labor-intensive operations will diminish and fewer people will be required to maintain the same level of outputs.

For managers, issues of appropriate supervision and pay treatment for the new work can potentially become acute. Studies have documented an average wage gain of 13.5 percent for employees using IT and have also shown that low-technology companies pay a higher premium for technology-savvy employees than do high-technology companies (Goss and Phillips, 2002). As more organizations become more sophisticated along technological lines, will pay of skilled workers go down? What about fragmented jobs? Pay treatment for a specialist who performs a vitally needed function for 12 hours a week is the sort of problem, which may be posed. Does this transition lead to high technology, Taylor-style (Taylor, 1911), piece-rate systems, where employees bill for specific tasks? We see this trend in many industries, ranging from hospital billings which charge for every bar-code-scanned employee action to billings by law firms which list charges for every telephone call made on behalf of a client.

De-skilling and up-skilling

Moreover, as noted, not everyone will be a beneficiary of the changes we envision. Wirth (1992), points out that technology, can either de-skill or up-skill jobs. He suggests that any time you enter a fast food restaurant, you observe de-skilling taking place. But will these de-skilled jobs continue to exist, or will they too be automated over time? In the service industry, to this point, many of the de-skilled jobs have not been automated due to technical limitations of robotic equipment, which have made flipping hamburgers or filling tacos a challenge for current robotics technology. In the case of clerical and administrative jobs, however, once the data is available via the network, and the business processes are integrated and built on the information system, it is the human employee who becomes superfluous, and whose very presence in the process leads to delays and errors. The same phenomenon has occurred when large enterprise systems have been implemented, enforcing externally-developed industry best practices in organizations. Over time, as the new processes are accepted in the enterprise, the de-skilled jobs are eliminated. Call centers have used expert support systems - large computer programs and databases, which recommend the correct advice for a problem – to permit low-skilled employees to provide technical advice. However, the jobs are transitory, and will be eliminated as customers can input the problems over the web, and sensors start reporting problems automatically to the help site. Under this scenario, the only help jobs that will exist will be those, which handle truly difficult problems that do not have canned responses. At the same time there are challenging jobs that should arise, in the area of IT and in the specific business, to manage updates to this system, monitor for security, and handle exceptions. However,

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the skills required by these new jobs are unlikely to match the abilities of de-skilled employees whose jobs are being eliminated. Of course, given the previous analysis, it may well be that even these de-skilled jobs will disappear. Regardless, the initial problem presented for the future of the American workforce will be justifying the pay and reward differences between the high-skill and low-skill workforces and dealing with the technological haves and have-nots.

What about the possibility – and perhaps likelihood – of structural changes, where the nature of remaining jobs also changes? There are many areas such as automobile design, medicine, or even plumbing where technology is requiring more skills. As manufacturers begin offering custom-designed automobiles, new positions will be created for personal designers - just as has occurred as the traditional airline reservation system has been automated, jobs have been eliminated, while new positions have opened up in vacation planning. Genomics presents the possibility of individualized medical care, driven by detailed information, with specialized applications accessing a vast array of analytical tools. Coile (2001) offers the prospect of a high-technology healthcare system, where the physician is needed to facilitate the delivery of the technology-based solution. One argument that can be made is that high-technology systems need more skills to be managed effectively. Since such skills are often in short supply, technology often comes up with the solution, offering a standardized service that replaces workers with equipment (labor with capital), and reduces the need for purely technically skilled employees. When technical needs decrease, a need may arise for humans to be customer-focused touch-points to counteract the numbing, insensitive feel of high technology, and organizations may search for employees with human skills rather than purely technical personnel. In effect much of the need may be for technology-savvy employees who retain the human touch rather than for highly-skilled personnel who focus only on the technology. This direction may especially be true in customer-centric services like healthcare.

The impact of the information age on the organization

The traditional, hierarchical organization chart was a product of classical management theory and especially that of Favol (1916). Following the prevalent thinking during this period, Fayol, who was a near contemporary of Fredrick W. Taylor, argued that there was one best way to organize. Departmentation was to be by function, and movement up the hierarchy would be slow but based upon competence and expertise. Communication would be through the chain of command, or what Fayol referred to as the scalar chain. Authority was to be centralized at the top of the organization. By the mid-1960s, theorists such as Burns and Stalker (1961) and Woodward (1965) recognized that the one best way did not hold for all organizations under all situations, and contingency theory was born. Classical organizations produced efficiency but were cumbersome at best and slow to react. They were seen as best for stable environmental conditions (Burns and Stalker) or, where the shop floor technology was mass production (Woodward). As the environment became unstable or where the technology was job-shop or continuous production, a move to a more free-flowing form, described as organic, was needed. While there was agreement that this form would be more decentralized, and less hierarchical, no single organic form emerged. Initial emphasis was upon departmentation by product or territory rather than by function, a form providing the individual departments with more autonomy than the functional form provided. Malone (2004) focuses on the rapidly falling cost of communication, and

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argues that the economic and scale efficiencies of large organizations, and the human benefits of small ones, can be achieved at the same time. He argues that low cost and pervasive communication technologies will support four decentralized organization structures: loose hierarchies, democracies, external markets, and internal markets that will shift management from "command and control" to "co-ordinate and cultivate".

There have been efforts as well to create more temporary units through project teams or matrix organizations to provide more responsiveness, and often such units are dispersed geographically. IT is used to support teams that may not be co-located, and virtual teams are created to support specialized business projects. CMC supports virtual teams and allows global cooperation. One essential question that needs to be answered is the degree of long-term trust that is created in virtual teams and organizations depending on these teams. A study of trust in virtual teams (Piccoli and Ives, 2003) shows that in virtual teams and other CMC environments there can be a decline in trust because of the higher levels of vigilance possible in IT-intensive environments, and the increased salience of failure to perform at the expected levels.

Since the late 1990s, the call has been to develop what is being termed the network organization or the virtual corporation (Dwyer, 1994). A common theme is that organizational functions can be performed literally anywhere. In one organization, for example, IT functions are performed in India, while marketing is done in New York. An obvious key is the use of web and related technologies to keep the functions linked. Thus, as the information system becomes the basis for all business transactions, what is necessary to perform the job is not access to a physical office, but access to the network. The employee at the office with no access to the information system is less capable of handling the problem than a remote employee with computer access via a wireless network. In addition, the skills needed in the corporation are not established, defined skills, but new problem-solving skills that change over time. The organization needs to be capable of acquiring these skills whenever and wherever they are necessary. At the same time the implications for organizational trust and long-term effectiveness need to be considered.

Challenges for the new employee and the new manager

The picture of the new organization, which emerges is of a stripped-down, fluid entity with relatively few employees and managers, and with many non-central functions contracted outside the organization. Organizations will probably be focused on developing core competencies while outsourcing business processes that are not deemed to be part of what sets the organization apart from its competition. The rise in global outsourcing has been driven by differential wage scales and the improvement in technology that have made areas of the world once considered remote a part of the integrated global economy. The change in the nature of work, and the perceived lack of core-competency benefits from maintaining manufacturing or clerical, administrative jobs in geographic proximity to senior management, have supported the rapid erosion of manufacturing jobs and increasing job losses in the office sector, while allowing for a growth in the overall economy. Even those employees who remain at the headquarters or central location are unlikely to be co-located or to be performing jobs with set hours. How will they be selected, managed, and evaluated? From the management perspective, competitive advantages will be gained by selecting employees based on their competence, co-ordination of their work, and supporting their commitment to the enterprise (Beer et al., 1985). In addition, the use of CMC will allow

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the organization to gather more formal knowledge from employees than in organizations using traditional face-to-face communications. IT thus potentially supports the organization's efforts in gathering knowledge from employees (Griffith *et al.*, 2003). Moreover, under this scenario, outsourcing the job to a remote location does not need to necessarily result in a reduction in the quality and even quantity of the organization's knowledge base.

Under these conditions, organizations have become increasingly wary of hiring full-time employees with a full suite of pension and healthcare benefits. As a result, even many old-economy organizations are retaining fewer employees and giving them more work, rather than bringing in new hires (Zuckerman, 2003). Obviously, employee – and, as well, managerial – trust in the system may be projected to decrease. But to what extent are the likely employee and managerial fears and insecurities realistic? It is important to recognize that if many or most of the scenarios we have described do, in fact, become realities, there will be a substantial loss of jobs outside the creative class. Returning to the news reports with which this discussion began, productivity may continue to rise dramatically while job loss also grows at a heavy rate. What will be the impact upon the economy if a large percentage of the workforce either does not work or works only a few hours or days a week? We are not aware of any widespread discussion or investigation of such possibilities in the management, economics, or social services literatures, or by government, yet even if the prospects are remote – and we do not believe they are – it would appear that attention to them is needed.

Several possibilities exist. First, it is important to note that, as Taylor's (1911) scientific management began to have a major impact upon the early factory system. there were widespread concerns, expressed both by employees and by management, that unemployment would be rampant as efficiencies eliminated the need for as many workers. Wren (1979) describes Taylor himself as answering his critics by calling for the factory system to produce at a much higher rate, and in that way, keeping worker jobs by producing more. Evidently, Taylor was right. The US factory system responded by becoming the most productive in the world, and the impact on unemployment was not at all as was feared. Note, however, that the current situation is somewhat different. Under scientific management, factory jobs remained; they were simply done more efficiently. Thus, for example, if productivity increased by 30 percent under Scientific Management, a corresponding increase in amount produced would absorb any potential job loss. But in the situation described, and after the de-skilling process, the routinized job will not remain at all. GE Medical Services plans to support a digitized hospital that has no paper files, no traditional nurses' stations to maintain records, and no medical records department. In this scenario, there is no time spent on tracking and documenting patient information and human efforts are directed toward patient care (Kalakota and Robinson, 2003). Under this scenario, the clerical jobs in hospitals stand to be completely eliminated. What may remain will be a small number of creative-class jobs to handle exceptions – jobs which are not likely to be ones for which the de-skilled worker could qualify.

Under an optimistic scenario, it is possible that what may evolve, if these changes continue in force, will be a wealthy, highly productive society where the work week and job entail very few hours which are very highly paid. Recall that Bridges (1994) has pointed out that our present concept of the job is recent in origin and developed in response to technological changes during the industrial revolution. Perhaps a new set of changes will cause the concept of the job to again evolve along these lines. Even so, a difficult period of transition could be likely.

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Looking forward

This paper has attempted to pull together evidence that a growing number of pressures and forces, all related to the onset of the era of pervasive IT, are impacting the structure of organizations, the nature of both managerial and non-managerial work, and the way the workforce is configured. Much of what we point to is familiar and includes the advent of technology to replace or reduce the number of service-sector jobs such as telephone operators, service station attendants, grocery cashiers, and bank tellers. However, we are concerned that there has been relatively little recognition of how widespread the changes are and what they may imply for the functioning of the future economic system and for the meaning and nature of work itself. Examination and research from cross-disciplinary perspectives may be required.

References

Adar, A.D. (2002), Managing Knowledge Workers, Quorum Books, Westport, CT.

- Anthes, G.H. (2004), "Speak easy", available at: www.computerworld.com/softwaretopics/ software/apps/story/0,10801,94271,00.html (accessed 5 October).
- Ashforth, B.E., Kreiner, G.E. and Fugate, M. (2000), "All in a day's work: boundaries and micro role transitions at work", *Academy of Management Review*, Vol. 23, pp. 472-91.
- Beer, M., Spector, B., Lawrence, P., Quinn Mills, D. and Walton, R. (1985), Human Resource Management: A General Manager's Perspective – Text & Cases, Free Press, New York, NY.
- Bell, D. (1976), *The Coming of Post-Industrial Society: A Venture in Social Forecasting*, Basic Books, New York, NY.
- Bridges, W. (1994), Jobshift: How to Prosper in a Workplace without Jobs, Addison-Wesley, Reading, MA.
- Burns, T. and Stalker, G.M. (1961), The Management of Innovation, Tavistock, London.
- Byrne, J. (2000), "Management by web", 28 August, available at: www.businessweek.com/2000/ 00_35/b3696011.htm (accessed 1 October 2004).
- Coile, R.C.J. (2001), "Impact of the new science of genomics", *Journal of Health Care Management*, Vol. 46 No. 16, pp. 355-65.
- David, P. (1990), "The dynamo and the computer: a historical perspective on the modern productivity paradox", *The American Economic Review*, Vol. 80 No. 2, pp. 355-61.
- Davison, B. (2003), "Management span of control: how wide is too wide?", *Journal of Business Strategy*, Vol. 24 No. 4, pp. 22-30.
- Drucker, P. (1957), Landmarks of Tomorrow, Harper & Brothers, New York, NY.
- Drucker, P. (1999), Beyond the Information Revolution, Atlantic, Charleston, SC.
- Dwyer, P. (1994), "Tearing up today's organization chart", *Business Week*, 18 November, pp. 80-90.
- Fayol, H. (1916), Industrial and General Administration, Dunod, Paris.
- (The) Federal Reserve Board (2003), "Remarks by Governor Ben S. Bernanke before the Bloomberg Panel for the Outlook on the US Economy, New York", available at: www.federalreserve.gov/boarddocs/speeches/2003/200309042/default.htm (accessed 5 September).
- Florida, R. (2002), The Rise of the Creative Class, Basic Books, New York, NY.
- Goss, E.P. and Phillips, J.M. (2002), "How IT affects wages: evidence using internet usage as a proxy for IT skills", *Journal of Labor Research*, Vol. 23 No. 3, pp. 463-74.

The changing nature of work

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JOCM 18,2	Griffith, T., Sawyer, J. and Neale, M. (2003), "Virtualness and knowledge in teams: managing the love triangle of organizations, individuals, and IT", <i>MIS Quarterly</i> , Vol. 27 No. 2, pp. 265-87.
	Groshen, E.L. and Potter, S. (2003), "Has structural change contributed to a jobless recovery?", <i>Current Issues in Economics & Finance</i> , Vol. 9 No. 8, pp. 1-7.
144	Kalakota, R. and Robinson, M. (2003), From E-Business to E-Services: Why and Why Now?, Addison-Wesley, New York, NY.
	Malone, T. (2004), The Future of Work: How the New Order of Business Will Shape Your Organization, Your Management Style and Your Life, HBS Press, Boston, MA.
	Mintzberg, H. (1998), "Covert leadership: notes on managing professionals", <i>Harvard Business Review</i> , Vol. 76 No. 6, pp. 140-7.
	NIST (2002), "What is pervasive computing?", available at: www.nist.gov/pc2000/ (accessed 12 June).
	Piccoli, G. and Ives, B. (2003), "Trust and the unintended effects of behavior control in virtual teams", <i>MIS Quarterly</i> , Vol. 27 No. 3, pp. 365-95.
	Rajan, R. and Wulf, J. (2004), "The flattening firm: evidence from panel data on the changing nature of corporate hierarchies", September, available at: www.management.wharton. upenn.edu/wulfresearch/Papers/Flattening_Firm_9_03_v2.pdf (accessed 15 September).
	Roach, S.S. (1998), "No productivity boom for workers", <i>Issues in Science and Technology</i> , Vol. 14 No. 4, pp. 49-56.
	Stiroh, K. (2001), <i>Information Technology and the US Productivity Revival: What Do the Industry Data Say?</i> , Federal Bank of New York, New York, NY.
	Taylor, F.W. (1911), Principles of Scientific Management, Harper, New York, NY.
	Thurow, L. (1999), Building Wealth: The New Rules for Individuals, Companies, and Nations in a Knowledge-Based Economy, HarperCollins Publishers, Philadelphia, PA.
	Uchitelle, L. (2004), "Growth in jobs ground to halt during December", <i>The New York Times</i> , 10 January (Section A), p. 1.
	Van Fleet, D.D. (1983), "Span of management research and issues", <i>Academy of Management</i> <i>Journal</i> , Vol. 26, pp. 546-52.
	Webopedia (2004), available at: http://e-comm.webopedia.com/TERM/E/electronic_commerce. html (accessed 1 October).
	Wessel, D. (2004), "The future of jobs: new ones arise, wage gap widens", <i>Wall Street Journal</i> , 2 April, p. 1.
	Whetton, D.A. and Cameron, K.S. (1998), <i>Developing Management Skills</i> , Addison-Wesley, Reading, MA.
	Wirth, A. (1992), Education and Work for the Year 2000: Choices We Face, Jossey-Bass, San Francisco, CA.
	Woodward, J. (1965), <i>Industrial Organization: Theory and Practice</i> , Oxford University Press, London.
	Wren, D. (1979). The Evolution of Management Thought, Wiley, New York, NY.
	Zuboff, S. (1984). In the Age of the Smart Machine, Basic Books, New York, NY,
	Zuckerman, M.B. (2003), "So where are all the jobs?", US News and World Report, 22 October, p. 86.

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The impact of structuring characteristics on the launching of virtual communities of practice

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Abstract

Purpose – Despite the increasing popularity of virtual communities of practice (VCoPs), our understanding of how to intentionally form, develop and sustain them is still at an embryonic stage. Aims to go some way to remedying this.

Design/methodology/approach – Investigates the attempt by 14 organizations to implement 18 VCoPs. Using existing documents, detailed logs, and focus groups, a large quantity of qualitative data was gathered, coded, and analyzed.

Findings – The study shows that the environment, the relevance of the VCoP's objectives to its members' daily work, and the degree to which the VCoP is embedded in the organizational structure of an organization are the three structuring characteristics most likely to explain the success or failure of a VCoP at the launching stage.

Research limitations/implications – The focus is limited to the launching phase; further research should investigate different stages of development.

Practical implications – The results may offer an indication as to the most important characteristics to consider at the launching stage of a VCoP. Management may want to work at changing the characteristics or take actions to counteract their obstructive effects.

Originality/value – This paper highlights the need for a contingency approach in VCoPs research and practice, and rids one of the misconception, which is pervasive in the extant literature, that all VCoPs are the same and should be managed the same way.

Keywords Action research, Knowledge management, Communities

Paper type Research paper

Introduction

The increasingly digital era and the ensuing emphasis on information and knowledge challenge traditional organizational models (Loebbecke and Wareham, 2003). Characterized by rapid change, global competition, market coordinations, organizational networks, frequent acquisitions, and pressure for just-in-time deliveries, the new volatile environment requires organizations to fundamentally reassess themselves and create new organizational capabilities (Hellstrom *et al.*, 2000; Ashkenas *et al.*, 1995). Technological developments in the current internet-enhanced economy have opened up a world of possibilities for organizations to reinvent themselves and have, at the same time, put enormous pressure on them to successfully integrate these technological developments if they want to remain front-runners. In addition to establishing virtual relationships with their customers (B2C) and their suppliers (B2B), organizations acknowledge the value of their human capital by



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structuring characteristics

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connecting their employees together (B2E) for increased job performance in a fast-paced environment. Once enterprise-wide portals and basic electronic communication are established, organizations want to go further and harness the power of collaborative technologies to develop new organizational capabilities.

One of the most powerful ways to create new organizational capabilities is to manage knowledge through collaborative work (Wenger and Snyder, 2000). Communities of practice (CoPs), which are groups of people who come together to share and to learn from one another (American Productivity and Quality Center (APQC), 2001), are seen as an innovative way to combine working, learning, and innovating (Brown and Duguid, 1991). In addition to being immensely valuable to the professional development of individuals (Gongla and Rizzuto, 2001), CoPs may be able to counteract "a slow-moving traditional hierarchy in a fast-moving virtual economy" (Lesser and Storck, 2001) and therefore benefit both the individual and the organization (Gongla and Rizzuto, 2001). CoPs provide the context for an easier reuse of knowledge, enable quick responses to customer needs and problems, and decrease learning curves for new employees (Lesser and Everest, 2001; Lesser and Storck, 2001; Wenger and Snyder, 2000) and are considered a means of developing and maintaining long-term organizational memory (Lesser and Storck, 2001).

Traditionally, CoPs have relied on face-to-face meetings (Wenger *et al.*, 2002), but in a fast-paced and distributed business environment, holding face-to-face meetings on a regular basis is slow, costly, and time-consuming. New collaborative technologies have allowed CoPs to become virtual. Transcending space and time, virtual communities of practice (VCoPs), while not excluding face-to-face meetings, rely primarily on new information and communication technologies (ICT) and internet capabilities, to allow their members to be creative and exchange what can sometimes be crucial pieces of information, in a virtual environment. These virtual communities generally include distributed members of a single organization, but could eventually become a vast virtual exchange tribune, where partners, customers, suppliers and the organization could meet and learn.

While spontaneous emergence, informal existence and no organizational regulation have been initially considered the defining characteristics of these communities (Brown and Duguid, 1991; von Krogh, 2002), there is increased awareness that CoPs or VCoPs need to be managed and should be part of a systematic and strategic approach by the organization to promote the effective management of intellectual capital (Lesser and Everest, 2001). It is now widely believed that organizations have a critical role in building these communities (Swan *et al.*, 2002) or in "structuring spontaneity" (Brown and Duguid, 2001). Organizational involvement in the lives of CoPs is a delicate matter, since a certain amount of autonomy and independence is necessary for breaking free from conventional organizational wisdom, and innovating (Brown and Duguid, 1991; McDermott, 1999).

The literature and, more specifically, the professional press, is packed with "one-size-fits-all" advice for organizations interested in forming, developing and sustaining CoPs. This literature tends to indicate that all CoPs are similar, the concept of CoP usually being seen as a one-dimensional construct. However, a closer look at what organizations do clearly reveals that, while CoPs share some common characteristics, they are also structurally very different. As gender, height, and eye

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color can be used to differentiate among human beings, size, age, and geographic dispersion, to name just a few characteristics, can be used to differentiate among CoPs. Moreover, different structuring characteristics or configurations of characteristics may prove to be more or less conducive to success.

The objective of this exploratory study is to investigate the impact of structuring characteristics on intentionally created VCoPs. Although CoPs have been around for a while, we have only begun to understand their dynamics and how an organization can intentionally form and develop them (McDermott, 2000a). An intentionally created VCoP faces specific challenges that are seldom investigated in the literature. This paper presents preliminary answers to the following research question: "Which structuring characteristics have an impact on the formation of intentionally-created virtual communities of practice?" In order to answer this question, we conducted an empirical study of the challenges faced by 14 organizations that attempted to form 18 VCoPs. We believe that considering structuring characteristics of VCoPs will facilitate the understanding of this emerging form of collaboration and will help pinpoint areas, where management action is required.

This paper is organized as follows. The next section defines VCoPs and identifies their structuring characteristics. It includes a brief discussion on the evolution and performance evaluation of VCoPs. Then the method that was used was described. The results of the 18 VCoPs implemented are then presented and discussed. The paper ends with a short conclusion.

Conceptual foundations

From CoPs to VCoPs

A community of practice (CoP) is a group of "people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger *et al.*, 2002, p. 4). Instead of interacting on a one-on-one basis, members open up to the whole community in the hope that everybody will benefit from their issues and expertise. While a community may have any common interest, a community of practice is work-related, focusing on a professional activity, skill, or topic (McDermott, 2000a).

A CoP is called "virtual" when its members use ICT as their primary mode of interaction. Being virtual does not preclude the use of face-to-face meetings, but several factors, including geographical dispersion and busy schedules, make communicating through ICT much more efficient. Face-to-face meetings, however, have been shown to be important for building relationships and trust among members, and most VCoPs use them on a more or less regular basis (Storck and Hill, 2000). A VCoP may use a large array of traditional media (phone, teleconferencing, fax, etc.) and more or less sophisticated technological tools (e-mail, videoconferencing, newsgroup, common databases, web sites, intranet, etc.) to support its members' interaction.

In this paper, literature on CoPs is used to understand VCoPs, but VCoPs, because of their intrinsic specificities, are likely to face additional challenges because mutual knowledge, which increases the likelihood of comprehension, a prerequisite for effective communication, may be more difficult to develop in a virtual setting (Cramton, 2001). Building the trust and sense of belonging necessary for open exchange and sharing may be much more difficult through computer-mediated interaction (Handy, 1995; Hildreth *et al.*, 2000). Distance may make it hard to remember

that a VCoP exists (Wenger *et al.*, 2002). Lack of comfort with ICT may require training and ongoing technical support strategies. Being the leader of a VCoP may also require the development of a new set of skills. Because of the increased prevalence of VCoPs in organizations (Ardichvili *et al.*, 2003; Wenger *et al.*, 2002), a deeper understanding of those challenges is critical.

Not all VCoPs are created equal

As mentioned earlier, the literature generally treats the phenomenon of CoP as a one-dimensional construct. However, we believe it is important to develop a deeper understanding of VCoPs specifically, because a closer look at CoPs and VCoPs shows that, while they share some common characteristics, they are also structurally very different. Their basic identity can be defined by a series of structuring characteristics, i.e. the rather stable elements of a VCoP or the elements that could be used to describe a VCoP if one wanted to take a snapshot of it at a particular point in time. To develop a typology of these characteristics, we performed a literature search to extract the basic characteristics of CoPs and VCoPs. We then classified them and evaluated them according to their ability to describe our own VCoPs (Dubé *et al.*, 2003).

The resulting typology, which includes 21 basic characteristics, is described briefly in Table I. It is divided into four categories. The first category, demographics, describes the main characteristics of a VCoP as a whole and includes the overall orientation, life span, age and maturity level of the VCoP. The second category consists of elements of the organizational context in which the VCoP evolves – namely, the creation process, level of boundary crossing, environment, organizational slack, degree of institutionalized formalism, and structure of leadership. The third category, membership, focuses on members: size, geographic dispersion, membership stability, enrollment and selection process, prior community experience, level of ICT literacy, cultural diversity and the topic's relevance to them. Finally, technological environment includes the VCoP's overall degree of reliance on ICT and the variety of ICT available to the VCoP's members. A further discussion of this typology can be found in Dubé *et al.* (2003).

While it is impossible to formulate hypotheses at this early stage of knowledge development in this area, we propose that different characteristics or configurations of characteristics may be more or less conducive to success (Dubé *et al.*, 2003). Indeed, we suggest that a VCoP's level of complexity depends on its positioning in terms of the 21 characteristics. For example, an intentionally-created, strategic VCoP at the potential stage of maturity is more complex, and therefore represents a bigger challenge, than a spontaneous, operational VCoP at the transformation stage.

VCoP evolution

Like all natural, living human institutions, CoPs go through different phases; they form, grow, mature, change, age and die (McDermott, 2000b). While several CoP life-cycle models exist (Gongla and Rizzuto, 2001; McDermott, 2000b; Wenger *et al.*, 2002), they identify rather similar phases. They all include a launching stage at which the CoP is planned and first created; this stage includes determining activities. When the idea is first generated, people start to think about issues and common interests and look around for other interested people. A core group is assembled. Interacting strategies and activities are also defined. After the initial formation phase, members

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Structuring characteristics	Brief definition	Measurement continuum ^a
<i>Demographics</i> Orientation	VCoPs may be created for different purposes; some have strategic implications, while others are created to increase	Operational (focuses on daily operations) ↔ Strategic (supports organizational mission and orientation)
Life span	operational efficiency. A VCoP can be assembled on a temporary basis to accomplish a specific purpose (for instance, a response to an <i>ad hoc</i> environmental change), but is more often created on	Temporary (short-term, definite time frame) \leftrightarrow Permanent (long-term, indefinite time frame)
Age	a permanent basis with no definite time frame in mind, as an ongoing mechanism for information sharing. Age defines the period of time the VCoP has to experiment and to recornes the a productive level	Old (more than five years) \leftrightarrow Young (less than one year)
Level of maturity	It is well documented that CoPs go through different phases It is well documented that CoPs go through different phases throughout their lives (Gongla and Rizzuto, 2001; McDermott, 2000b; Wenger <i>et al.</i> , 2002). Level of maturity refers to the phase reached by the VCoP.	Transformation (renewal, new beginning, or death) \leftrightarrow Stewardship (effort to maintain momentum) \leftrightarrow Maturing (development of strong sense of self, of trust) \leftrightarrow Coalescing (starting of activities) \leftrightarrow Potential (loose network without formal structure)
Organizational context Creation process	A VCoP can be deliberately established by management, who will define its purpose and select key members (top-down approach) or can spontaneously emerge and be created by a number of interested members (bottom-up	Spontaneous (spontaneous emergence) \leftrightarrow Intentional (establishment by management)
Boundary crossing	approach) (Fontaine, 2001). VCoPs are often created to break organizational silos and promote collaboration, learning, and information sharing. It is therefore common for VCoPs to cross boundaries across work groups, organizational units and even organizations	Low (same business unit) \leftrightarrow Medium (across business units within the same organization) \leftrightarrow High (across organizations)
Environment	(Wenger and Snyder, 2000). Forces from the larger context include the characteristics of the environment, the culture and subcultures of the organization (or organizations) involved, the management style(s), and the whole political context.	Facilitating (environment receptive to change) \leftrightarrow Neutral (neither obstructive nor facilitating environment) \leftrightarrow Obstructive (environment not conducive to change)
		(continued)
Table I. Structuring characteristics of VCoPs		The impact of structuring characteristics 149

JOCM 18,2 150		rces available to the sources available, but to be its) \leftrightarrow Low (few resources he CoD)	rection → Bootlegged Legitimized (officially eceiving direct resources) ↔	lished and assigned to specific gotiated (roles negotiated and	lly fewer than 100) ↔ Large	Λ edium (in the same state) \leftrightarrow	ed to people who meet certain an become a member)	ee to participate) \leftrightarrow Mixed compulsory members) \leftrightarrow pation is required)	(continued)
	Measurement continuum ^a	High (large amount of resou organization) ↔ Medium (re shared among several projec available to be allocated to tj	Unrecognized (invisible to or (visible only to a group) \leftrightarrow sanctioned) \leftrightarrow Supported (r haritritionalized (official start	Clearly assigned (roles estable people) \leftrightarrow Continuously ne established as needed)	Small (few members, general (several hundred members)	Low (in the same city) \leftrightarrow N High (around the world)	Closed (membership restricts criteria) \leftrightarrow Open (anyone α	Voluntary (people freely agr (mix of both voluntary and c Compulsory (people's partici	
	Brief definition	Refers to the resources available to the organization to allocate to the community in order to absorb the costs associated with the non-productive phases inherent in the learning curve	Refers to the degree to which a VCoP has been integrated into the formal structure of an organization. In a high degree of formalism, the VCoP has been fully integrated and is considered a formal unit of the organization	An organization can find it valuable to create a VCoP formal governance structure within which individuals are appointed to specific roles (Lesser and Everest, 2001; Gongla and Rizzuto, 2001) or can let roles and authority relationships emerge through interaction around expertise (Lesser and Schryb, 2001)	Refers to the number of members of the VCoP.	Refers to the physical location of the participants. In one VCoP, members may all be in the same building, while, in another members may be scattered around the world	A VCoP can have an open membership whereby anyone can become a member and participate (e.g. an internet commutry) or a closed one (selected members only).	While members are more likely to be self-selected and volunteer to be part of a VCoP, member participation can be "strongly" encouraged by management to the point where members do not feel free to turn down the invitation.	
Table I.	Structuring characteristics	Organizational slack	Degree of institutionalized formalism	Leadership	<i>Membershi</i> þ Size	Geographic dispersion	Member selection process	Member enrollment	

Structuring characteristics	Brief definition	Measurement continuum ^a
Members' prior community experience	An existing network of individuals may be the basis of a new CoP (Lesser and Everest, 2001) or a new group of people can be assembled around a common interest.	Extensive (most members know one another and are used to interacting) \leftrightarrow Medium (many informal networks exist among members) \leftrightarrow Low (few informal networks exist among members) \leftrightarrow None (members do not generally
Membership stability	Membership may be relatively permanent, but can also have more fluidity. Even in a closed-membership VCoP, membership may be fluid because of organizational	Interact) Stable (current members do not leave and new members are not accepted) \leftrightarrow Fluid (members may depart and new members may join anytime)
Members' ICT literacy	turnover (Storck and Hill, 2000). Refers to members' general level of comfort and experience with technology.	High (most members have extensive experience with ICT) \leftrightarrow Medium (most members have more or less experience with ICT) \leftrightarrow Low (most members have little experience $\frac{1}{2}$
Cultural diversity (profession, language, vision)	Cultural diversity is created by a mix of national, organizational, and professional cultures assembled into a VCoP. Refers to the level of cultural homogeneity in the VCoP.	with DC1) Homogeneous (low cultural diversity among members) ↔ Medium (intermediate level of cultural diversity) ↔ Heterogeneous (high cultural diversity)
Topic's relevance to members	While day-to-day topics may vary, VCoPs are usually assigned a broad theme or objective that may be more or less relevant to its members' daily work.	High (topic is relevant to most members' daily work) ↔ Medium (topic moderately relevant to most members' daily work) ↔ Low (topic not connected to most members' daily work)
Technological environment Degree of reliance on ICT	While a CoP must be predominantly using ICT to be called "virtual," VCoPs may use technology to varying degrees.	Low (face-to-face meetings held on a monthly basis) \leftrightarrow Medium (face-to-face meetings held approximately six times a year) \leftrightarrow High (fewer than six face-to-face meetings
ICT availability	In addition to the traditional media such as the telephone, fax, teleconference and e-mail, VCoPs vary in terms of the means that are available to them to interact.	a year) High variety (multi-purpose software) ↔ Low variety (a simple, one-function software)
Note: ^a Measurement continu	a are presented according to an increasing level of complexit	y
Table I.		The impact of structuring characteristics 151

need to informally discuss, share and help each other. This critical stage helps members find commonality in the problems they face, see the value of their interaction, build trust, and define common norms regarding how to interact (McDermott, 1999). Since a community is likely to face different challenges at each stage and to require different actions (Wenger *et al.*, 2002), isolating and investigating this unique launching phase seems to be a worthwhile research strategy.

VCoP performance

Since considerable effort and resources are devoted to the creation and development of CoPs, organizations are rightfully questioning their contribution. However, CoP performance measurement is still at an early stage of development (Cothrel and Williams, 1999). The literature offers a few specific indicators of success, such as levels of participation and sustainability (Gongla and Rizzuto, 2001), while Cothrel and Williams (1999) state that a CoP has succeeded if it has achieved its purpose, whatever that may be.

For the purposes of this study, we chose a performance measure applicable at the launching stage that allowed us to compare VCoPs. Considering the specificity of this early stage, purpose achievement was not relevant and therefore two other indicators were chosen:

- (1) Actual existence (i.e. does the VCoP have a basic identity defined around a leader and a core group of members?).
- (2) Health (i.e. was the VCoP able to progress and did it achieve a certain level of participation and activity?).

Method

This study is part of a larger research project managed by the CEFRIO research center and conducted by a multidisciplinary team of researchers. This project started in the summer of 2000 and ended in December 2003. During that period, 18 VCoPs were implemented in 14 different organizations. Five organizations were from the public sector, three from the private sector, three were para-governmental, and, finally, three were professional associations or labor unions. The creation of each VCoP followed a prescribed approach. A senior manager, called the sponsor, was the project's representative at the executive level. In our study, the sponsor then identified a formal leader for the VCoP, i.e. a person responsible for the overall guidance and management of the VCoP. A leader helps build and maintain the VCoP, encourages participation, helps direct attention to important issues and brings in new ideas to energize the VCoP if so required. Finally, each VCoP was assigned a coach by the research team. This coach, hired externally by the CEFRIO, was mandated to help the leaders in their daily tasks and play the role of both a consultant and a confidant. The coach and the leader interacted through e-mail, by phone or at face-to-face meetings on a regular basis, depending upon the ongoing activities of the VCoP.

Three data collection sources have been mainly used for the part of the study reported on here. Firstly, when an organization expressed interest in being part of the project, an initial document was created. This document recorded the basic information on the community to be formed, such as its general objectives, the names of the community sponsor, leader and participants, the technology to be used, etc. The

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writing of this document was the first step in a rigorous logging process. In addition to this initial document, a research assistant was responsible for filing a detailed history of all cases from their very beginning. She called the VCoP coaches on a regular basis to keep up with any new developments and the coaches also called her to report any critical new incidents. All this information was rigorously recorded and constituted the second source of data. Finally, three focus groups were conducted; one included the VCoP leaders, the second, a sample of participants, and the third was conducted with all the coaches. These discussions were tape-recorded and transcribed.

The data collection strategy led to the gathering of a large quantity of qualitative data. As recommended by Miles and Huberman (1994), timelines and tables were developed to organize the data. These documents present a detailed picture of what happened during the first stage of the life of each VCoP.

Coding

Characteristics of the VCoPs

Before assessing the impact of structuring characteristics on success at the launching stage, it was first necessary to classify each of the 18 VCoPs using the structuring characteristics typology (Table I). However, all the VCoPs in this study shared some characteristics: all were operational, small, young and had a temporary life span. They had all been created through a top-down approach following a prescribed leadership structure. Since the launching stage is the only stage under study here, the level of maturity is not a relevant structuring characteristic. Therefore, orientation, size, age, life span, creation process, leadership and level of maturity were dropped from further analysis. The VCoPs were coded according to the 14 remaining characteristics, using the coding presented in Table I.

In order to ensure coding reliability, the VCoPs were initially independently coded by the three authors of this article, based on the sources of information and data collection presented previously. Ample discussion took place to resolve discrepancies among the authors and to refine some of the anchors of the continuums (for example, it was sometimes necessary to add a "medium" category to better capture the reality of the VCoPs at hand). Following these discussions, a final, more detailed and better defined version of the typology was presented to a research assistant, who had ample knowledge of all VCoPs and had access to all sources of documentation. The research assistant blindly coded each of the 18 VCoPs and her coding was compared to that of the authors. The agreement rate was 88 percent. Again, any discrepancies were resolved by discussing the rationale behind the coding. The final results are presented in Table II and are illustrated by examples in the following pages. These examples do not claim to describe each and every community, but rather to highlight the most representative features of the VCoPs in our sample.

The VCoPs in our sample varied in terms of both boundary crossing and geographical dispersion, although none of them had members scattered around the globe. VCoP A, for example, included members from different organizations (boundary crossing = high) and across several states (geographical dispersion = medium). At the other extreme, all members of VCoP F were from the same unit in the same organization (boundary crossing = low) and were all located in the same city (geographical dispersion = low).

JOCM 18,2	ICT availability	Low	Varnety High	varrety Low	Varnety High	varrety Low	varrety Low	varrety Low	variety Low	Varrety High	Low	varrety Low	varnety High	Varrety High	Medium	Low	varrety Low	variety - Low	valiety
	Reliance on ICT	High	High	Medium	High	Medium	Low	High	High	High	High	High	High	High	I	I	High	- High	
154	Topic relevance	High	Low	High	High	Medium	High	Low	High	High	High	Low	High	High	Medium	Medium	Medium	Low High	
	Cultural diversity	Medium	Homogeneous	Homogeneous	Homogeneous	Medium	Medium	Medium	Homogeneous	Heterogeneous	Heterogeneous	Medium	Medium	Medium	Homogeneous	Heterogeneous	Homogeneous	Homogeneous Homogeneous	
	Members' ICT literacy	Low	High	Low	High	High	High	Low	Medium	Medium-high	Medium	High	High	High	High	High	I	Low Low	
	Membership stability	Stable	Mod. stable	Fluid	Fluid	Stable	Mod. stable	Mod. stable	Fluid	Mod. stable	Stable	Stable	Stable	Stable	Fluid	I	Mod. stable	– Fluid	
	Prior community experience	None	None	None	Extensive	Extensive	None	Low	Medium	None	Low	Medium	Extensive	Medium	Extensive	Medium	Medium	Low Low	
	Member enrollment	Voluntary	Voluntary	Compulsory	Compulsory	Mixed	Mixed	Mixed	Compulsory	Voluntary	Voluntary	Voluntary	Voluntary	Compulsory	Voluntary	Voluntary	Compulsory	Voluntary Voluntary	
	Member selection process	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Open	I	Closed	Open Closed	SS
	Geographic dispersion	Medium	Medium	Medium	Low	Medium	Low	Medium	Medium-low	Medium	Medium	Medium	Medium	Low	Low	Medium	Medium	Medium Medium	lack of progre
	Institutionalized formalism	Supported	Supported	Supported	Institutionalized	Institutionalized	Legitimized	Supported	Supported	Supported	Supported	Supported	Legitimized	Legitimized	Unrecognized	Unrecognized	Bootlegged	Unrecognized Bootlegged	lering the VCoP's
	Organizational slack	Low	High	High	High	High	Medium	Low	High	High	High	High	High	High	High	High	High	Low Low	information consi
	Environment	Facilitating	Facilitating	Obstructive	Facilitating	Facilitating	Facilitating	Neutral	Facilitating	Obstructive	Neutral	Neutral	Obstructive	Obstructive	Obstructive	Obstructive	Obstructive	Obstructive Obstructive	ible to get this
Table II. The structuring characteristics of our	Boundary crossing	High	Low	Low	Low	Medium	Low	Medium	Medium	High	High	Medium	Low	Medium	Low	High	High	Low High	- = Imposs
VCoPs	VCoP	А	В	С	D	Е	Ч	G	Н	I	ſ	К	L	Μ	Z	0	Р	Q	Note:

The environments in which each VCoP evolved also differed greatly. Some VCoPs were implemented in organizations in which both the culture and management styles provided support for the community (environment = facilitating). For example, VCoP E was set in an organization in which informal virtual teams already existed and were culturally not only accepted, but also encouraged. On the other hand, other organizational environment = obstructive). Indeed, VCoP R was founded, were categorized as hostile (environment = obstructive). Indeed, VCoP R brought together people from different and sometimes competing organizational culture was such that expressing disagreement or even making comments was viewed by some as denoting a lack of respect toward the authority figures in that domain.

While most organizations in our sample had sufficient slack to allocate resources to the VCoPs if they wanted to (organizational slack = high), some did not have this luxury. For example, both VCoPs A and G were set in organizations with very tight budgets that relied entirely on external grants to provide some resources for their communities (organizational slack = low). The host of VCoP F, on the other hand, was a relatively well-endowed organization in the private sector, but most of its resources at the time were devoted to a major strategic project, making it difficult to free up additional resources for other projects (organizational slack = medium).

With regard to their degree of institutionalized formalism, all the VCoPs in our sample were pilot projects; therefore few were formally included in the organizational structure. Thus, only VCoPs D and E were qualified as institutionalized. However, many VCoPs received some resources from their organizations, justifying their coding as supported. For example, VCoPs A and K received enough financial resources to hire full-time leaders from outside the organizations. VCoP F, however, did not receive any resources because, as mentioned above, all resources in this organization were devoted to a major strategic project at the time. Since it was, however, fully endorsed by its organization, F was coded as legitimized, as were VCoPs L and M. In addition, two VCoPs in our sample, P and R, were put together by a specific group of people in their respective organizations and were never officially sanctioned by the organization as a whole; these VCoPs were labeled as bootlegged. Finally, three VCoPs, N, O and Q, never achieved any visibility in their respective organizations, justifying their coding as unrecognized.

As far as membership is concerned, most VCoPs in our sample limited membership to selected individuals (member selection process = closed). However, in three cases, VCoPs D, N and Q, membership was open to all interested individuals in the business unit (member selection process = open). Open membership goes hand in hand with voluntarism (members' enrollment = voluntary), but some VCoPs with a closed membership also had voluntary enrollment. In these VCoPS, a core group of members was first selected on a voluntary basis, but the community was subsequently closed to additional members. In other VCoPs, members were designated (members' enrollment = compulsory). Finally, some organizations, such as the host of VCoP G, designated members to be part of the community and offered other people the possibility of participating on a voluntary basis (members' enrollment = mixed).

The member selection process may also be linked to membership stability. Open CoPs tend to have a flowing membership, because volunteers join as they please, whereas closed communities tend to have a stable membership. In our sample,

however, three communities with closed membership (C, H, and R) lost several members and welcomed many new ones, either because new recruits, who fulfilled the criteria to be part of the VCoP, joined the organization or the unit, or because some VCoP members left due to organizational turnover and had to be replaced (membership stability = fluid). Five communities, B, F, G, I, and P, were coded as having relatively stable membership because changes in membership occurred only on an occasional basis.

CoP composition is not limited to the number of members or their stability. The diversity among community members is also a crucial element. In order to take this into account, our typology includes the cultural diversity dimension, which encompasses national, organizational and professional cultural differences. In our sample, eight VCoPs were coded as homogeneous because they drew together members from the same organization (and often the same business unit) and the same professional field. Some communities, however, brought together members who were culturally similar in some respects, yet different on other dimensions. Cultural diversity in those communities was coded as medium. Members of VCoP A are a perfect illustration of this coding: while they had similar educational and occupational backgrounds, they occupied different positions and worked in different organizations with very diverse modes of operations, and different organizational goals and strategies. As a result, their expectations of the VCoP, their objectives, and their daily practice varied greatly. Finally, three communities were coded as having a heterogeneous culture because their members were highly diverse.

Prior community experience within our sample ranged from none to extensive. For example, VCoP I was composed of individuals from different organizations who had never worked together and most of whom had not even known each other prior to this project (prior community experience = none). In VCoP H, where members used to collaborate occasionally before the community was created, the prior community experience was coded as "medium." On the other end of the continuum, VCoP E was built on an existing group of experts who were used to collaborating (prior community experience = extensive).

Since our study examines the launching of virtual CoPs, all of the communities in our sample relied to some extent on technology to interact. However, they presented different degrees of ICT reliance, ICT availability and member ICT literacy. Reliance on ICT was measured by the number of face-to-face meetings; the more meetings, the lower the reliance on ICT. The vast majority of VCoPs relied heavily on technology (reliance on ICT = high), holding less than six face-to-face meetings per year. On the other hand, one community, VCoP E, was built on an existing group of people who were used to meeting every six weeks. Since their meetings continued after the launching of the community, this VCoP was coded as having a medium reliance on ICT. Another community, VCoP F, was coded as low on this aspect, since its members met every other week.

Regardless of ICT reliance, not all communities in our sample could benefit from the same type of technology. While some used several software programs for multiple purposes (ICT availability = high variety), others either had to manage with one simple, one-function program, usually a forum (ICT availability = low variety), or

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only used a small number of the functions of their software. For example, VCoPs J and K only used the forum module of their otherwise powerful software.

Members' ICT literacy is also an important consideration for virtual communities of practice as it influences the way people react to and participate in their VCoP through technology. In our sample, ICT literacy ranged from low to high. For example, members of VCoP G seldom used computers in their daily work and had little experience with ICT (ICT literacy = low). At the other end of the continuum, the daily work of members of VCoPs L and M required them to use ICT extensively (ICT literacy = high). In the middle of this continuum, other community members, such as in VCoP I, had developed a certain level of ability to use ICT, but would have to make additional efforts if they wanted to reach a comfortable level (ICT literacy = medium).

The final element in our typology is relevance of the topic, which measures how relevant the VCoP's main theme is to the individual members' daily work. The VCoP's in our sample also varied greatly on this aspect. For instance, VCoP K was created in an organization which had previously experienced difficulties in setting up collaborative efforts. Therefore, the organization selected the topic very carefully so that no one would be displeased or feel threatened. As a result, they chose a topic that was so neutral that it was not crucial to anyone's daily work (topic's relevance = low). Although the topic chosen was related to members' professional activities in VCoP N, none of the members considered it the core of their work, which justifies the coding of this VCoP as medium. However, members of ten communities chose topics that were directly related to their daily work (topic's relevance = high).

Success of the VCoPs

To discriminate among VCoPs, it was then necessary to assess their level of success using the two criteria presented earlier:

- (1) Existence.
- (2) Health.

Using the coding method used for the structuring characteristics, the level of success was first coded jointly by the three authors; then, their coding was compared to the research assistant's independent coding, and discrepancies were resolved through discussion.

In order to be considered existent, a VCoP had to have at least one leader and a core group of members around a specific topic during the active project period, from November 2001 to March 2003. Despite this lengthy 17-month period, VCoPs N, O, P, Q and R (as shown in Table III) were not formed and therefore were coded as non-existent. In two cases (P and R), efforts simply ceased after a while. In the three remaining cases, discussions took place throughout the research project timeline, but no formal VCoP was ever formed. Health, which refers to the level of activity in the VCoPs (including active and passive participation), was our second evaluation criterion. Despite being officially created and leaders being active, VCoPs K, L, and M were coded as having no degree of health since no group interaction had ever occurred. Other VCoPs were coded as having either a low, medium or high degree of health. For example, VCoP J was coded as having a low level of activity (health = low) because only a few people put documents on the VCoP's web site on a regular basis and most other users were passive participants, mainly reading these documents. On the other

JOCM 18,2	VCoP	Level of launch Existence	f success at ning stage Health	Summary - most prominent explanatory factor(s)
	VC01	Existence	Health	Summary – most prominent explanatory factor(s)
	А	Yes	High	Leadership: Very involved leader High relevance: Topic closely related to members' daily work
158	В	Yes	High	Leadership: Very involved sponsor and leader
	- с	Yes	High	Leadership: Very involved coach
	D	Yes	High	High relevance: Topic closely related to members' daily work Prior experience: VCoP reinforced an existing network that used to meet face to face
	E	Yes	High	Leadership: Very involved leader/sponsor Prior experience: VCoP reinforced an existing network that used to meet face to face
	F	Yes	High	High relevance: Topic closely related to members' daily work Environment: New VCoP concept very much in line with the new orrenziation's philosophy.
	G	Yes	Medium	Leadership: Very involved leader Environment: Very few resources, so a real need to put
	Н	Yes	Medium	High relevance: Topic closely related to an important organizational issue and to members' work on a daily basis Leadership: Leader did not have enough time to play his role
	Ι	Yes	Medium	Leadership: Very involved leader
	J	Yes	Low	Leadership: Very united leader Environment: Opposing forces. Went through major transformations in the last years: IT, collaboration, external partners' involvement, but some bureaucratic forces are still operating Relevance: Members did not see the added value of their participation
	К	Yes	None	Leadership: VCoP leader was a good content leader, but did not relate very well to people; he did not have the ability to bring people together Top-down creation process: informal networks already existed and members did not see the added value
	L	Yes	None	Leadership: Little (voluntary or designated) leader involvement – too busy with other projects Top-down creation process: informal networks already existed and members did not see the added value of their participation
	М	Yes	None	Leadership: No real management support Environment: Independent and closed silos did not see the need to extend their collaboration Top-down creation process: informal networks already existed
Table III.Success of the VCoPs				and memoers and not see the added value (continued)

VCoP	Level of success at launching stage Existence Health		of success at aching stage e Health Summary – most prominent explanatory factor(s)			
N	No	None	Environment: Highly bureaucratic organization Leadership: The first designated leader had no interest in the new direction taken by the VCoP and middle managers refused to give two possible leaders the time to get involved in the	159		
			community Leadership: No real management support; despite VP and sponsor's involvement, no solution was found			
0	No	None	Environment: The VCoP was to be formed to support a new division created as a bridge among many actors in a certain field; a major actor in this group did not agree with this new mandate and did not agree to collaborate; the new division and the VCoP lost its possible credibility Leadership: No real leadership; the IT environment was never set up because of "security" reasons			
Ρ	No	None	Leadership: No real management support; very little involvement on the part of the sponsor; impossible to find a leader Environment: Very hierarchical and bureaucratic culture Relevance: the topic was the rules and norms that regulate one's practice; it was made clear at the very beginning that the idea was not to improve them, but rather to discuss how to apply them; considering this, potential members manifested little interest (no empowerment)			
Q	No	None	Leadership: No real management support; the nominated sponsor had no time to get really involved in the VCoP implementation Environment: Autonomous units saw collaboration as an invasion of their autonomy Relevance: It was difficult to find a topic that would interest members: much difficulty in settling on a specific topic			
R	No	None	Leadership: The project's sponsor had to quit for personal reasons and no one could fill his shoes Environment: Members belonged to different and competing organizations with no collaborative habits; the strong competitive culture in the environment prevented free participation Relevance: Although the topic was very relevant, it was also too ambitious and could not get past some technical obstacles	Table III.		

hand, VCoP A members were very active from the very beginning (health = high). A majority of members actively participated by writing new ideas and commenting on or responding to other members' requests and comments.

Table III shows that six VCoPs achieved great success at the launching stage (health = high) (A, B, C, D, E, and F), three others achieved an intermediate level of

JOCM	activity (health = medium) (G, H, and I), and one, a rather low level (health = low) (J).
182	On the negative side, five attempts (N, O, P, Q and R) were complete failures (no
10,2	existence) and three VCoPs were created (K, L, and M) but never achieved any degree
	of activity (health = none). In addition to our classification, Table III summarizes the
	key factors that, in our data, seem to be the most important for explaining the level of
	success of each VCoP, whether they are structuring characteristics or not. These
160	results give support to the proposition that structuring characteristics may be
	operating at the launching stage of an intentionally formed VCoP.

Results and discussion

Joining Tables II and III becomes an enlightening exercise and allows us to answer our research question. For this analysis, we separated the VCoPs into two distinct groups:

- (1) Those that achieved a certain degree of health (Success group: A to J).
- (2) Those that did not achieve any degree of health, along with those that never really existed (failure group: K to R).

This first grouping shows one important result: all the VCoPs in the Failure group had an obstructive environment while most of the VCoPs in the success group had a facilitating or neutral environment. In that group, only two VCoPs (I and C) had an obstructive environment. Despite a very constraining environment, VCoP I still achieved an intermediate level of activity. Further analysis of the data shows that this level of success can be explained by the active role taken by the leader of the VCoP; assigned full-time to this task by his organization, he took his responsibilities very seriously. VCoP C, on the other hand, stands out as being very special; against all odds, despite a high level of uncertainty in the environment and a busy leader who had to go on a long sick leave, the community achieved great success at the launching stage. Two factors seem to explain this level of success. Firstly, the coach was very present and filled in when the leader was not able to fulfill his role; with tenacity and flexibility, he led the organization through several VCoP experimentations and, finally, to the identification of a topic that was very relevant to the members and very important for the organization. Secondly, the "too busy" leader was finally replaced, and his replacement was able to fulfill his role more successfully.

Another structuring characteristic also seems to play a role in the success of the communities. The topic discussed in the VCoPs was highly or moderately relevant to the daily concerns of the members in eight of the ten successful VCoPs. VCoPs B and G succeeded despite a low level of relevance. In both cases, although the topic may have been less relevant to the members, it was known to be very important for the organization as a whole; moreover, the leaders were very motivated and involved and were able to "sell" the importance of the topic to the VCoP's members. Three VCoPs of the failure group (L, M and R) also had highly relevant topics. In the case of L and M, these VCoPs did not succeed because their members did not see any benefit in making their already existing informal networks formal and virtual. The failure of VCoP R can be attributed to the premature departure of the sponsor, with whom the project was too strongly identified.

A third structuring characteristic seems to be differentiating between successful and failing VCoPs: institutionalized formalism. Institutional formalism refers to the degree to which the VCoP has been integrated into the organization. Nine out of the ten successful VCoPs were directly supported by their organization, being coded either as supported or as institutionalized. The tenth one, VCoP F, was not institutionalized, nor did it receive direct support because most of the organizational resources were directed to a major, strategic project. Despite this lack of direct support, however, the VCoP succeeded, mainly because its topic was so closely aligned with the organization's management philosophy that it did not really require any additional resources to sustain its activity. On the other hand, only one VCoP in the Failure group (K) received direct resources from its organization. In that particular case, failure can be attributed to a lack of relevance of its topic and to a rather neutral environment.

The other structuring characteristics did not seem to have a direct impact on the rate of success of the VCoPs at this important launching phase, since the successful and less successful VCoPs seem to be spread across each characteristic.

Our data indicate that the broader environment, including management style and the organizational, cultural, and political context within which a VCoP is formed. seems to be the most determining structuring characteristic that facilitates or hinders its success at the launching stage. A facilitating or somewhat neutral environment allows the VCoP to be launched on the right foot, while an obstructive environment will, from the very beginning, work to resist the launching. In transcending physical and temporal constraints, VCoPs can be perceived as transcending organizational discipline and control (Perin, 1991). It was very clear, for example, that the sponsor of VCoP P, once he understood the power the VCoP would give its members, was not comfortable with the ambiguous and unpredictable direction in which discussions could lead. In this particular case, the launching of the VCoP faced a lot of managerial resistance. The VCoP concept was associated by middle managers with the idea of the horizontal corporation, generating a lot of questions about their role and power within that type of structure. Another example of an obstructive environment is that of VCoP O: the leader used ICT security issues as a reason to endlessly postpone the launching of the VCoP, while it soon became clear to the coach that political reasons (i.e. a lack of credibility on the part of the newly formed division) was in fact the main obstacle. On the other hand, due to a very supportive environment, other VCoPs, such as F, achieved great success despite a relative lack of resources. VCoP F brought together specialized technicians and engineers to promote collaboration through knowledge sharing forums and problem solving. This objective was perfectly in line with the management philosophy characterized by a strong commitment to knowledge sharing, and thus received a lot of support. These results are in line with the change management literature which views structural and cultural factors as powerful determinants of short-term success at the early stages of an organizational change (Tushman and O'Reilly, 1997). Research on evolutionary change also shows that the successful articulation of individual-group needs and programmatic changes, like VCoPs, requires an organizational capacity for change (Jurie, 2000).

Despite an obstructive environment, one VCoP was able to succeed because of the leadership structure, which included a coach for the leader. In the literature, the roles of sponsor, leader, and participants are usually well documented (e.g. Fontaine, 2001; APQC, 2001), but this is hardly the case for the role of the coach. Since formalized CoPs and VCoPs are rather new modes of collaboration, the community leader is likely to be in this position for the first time, and consequently has no role model within the organization. Yet fulfilling the role of a community leader may be quite different from

the person's daily work. Offering this person coaching is a way to strengthen the leader's ability and increase the likelihood that the VCoP will succeed. The coach will listen attentively, provide a fresh perspective, and help develop new ideas and strategies. As noted by Bridges and Mitchell (2002), organizational change means transition and, from this standpoint, no training program can fully prepare leaders for managing change. They need individualized support, such as coaching, to lead change. But our results also show that, in addition to individualized support, it is important for the VCoP to be acknowledged by the organization, since supported and institutionalized VCoPs seem to have a higher chance of success at the launching stage. A higher degree of institutionalized formalism, if performed without ruling or bureaucratizing a VCoP, can confer a sense of legitimacy and give the VCoP access to more resources than if unrecognized (Wenger *et al.*, 2002).

In a highly political context, members may feel like they cannot express themselves freely. VCoP P acutely experienced this problem. Members, who were invited to discuss the interpretation and application of rules and procedures in their work, spontaneously raised the issue that they were afraid to be accused of not doing their work well because of misinterpretations or regional differences. In such a context, sharing through VCoPs is not likely to be successful, since the concept is too far from the organization's culture (McDermott and O'Dell, 2001). In addition to these political elements, participation is a highly social activity which requires new abilities: getting to know what could be relevant to other members, evaluating the appropriate level of details and being aware of the legal constraints attached to information (in certain areas) are skills and knowledge members have to develop and acquire (Hayes, 2001).

Adopting a top-down approach to form VCoPs also raises the issue of relevance as shown by our results. While most VCoPs held extensive discussions about what topics should be discussed, it seemed to be very difficult, in many cases, to find topics that would bring together a significant number of people. These intentionally formed VCoPs may lack common context and purpose (Fontaine, 2001) that, with or without voluntary participation, are needed for real interaction. By contrast, most VCoPs with a highly relevant topic thrived.

Relevance also means that VCoP members feel that their contributions are worthwhile. In one specific VCoP, the sponsor explicitly said that members were to hold discussion according to the current rules and procedures, and that no recommendation to change these rules and procedures would be considered. At this point, members expressed much disappointment and realized that the VCoP would not be a mechanism that would initiate any changes in their organization. The highly bureaucratic and hierarchical structure would succeed. It is not surprising that this "potential" VCoP was never able to find a leader.

The results of this study have a clear implication for organizations. The structuring characteristics of a VCoP, especially the environment and relevance, are of utmost importance if an organization wants to increase the likelihood of a VCoP succeeding. Confronted with a situation in which the environment is obstructive and the topic at hand is more or less relevant to the members on a short-term basis (but important for the organization), managers are faced with two choices. Firstly, they can try to act on those structuring characteristics. While these changes could directly impact the likelihood of success of a VCoP, changing the environment is a slow, difficult, and sometimes painful process that is more likely to take place over the long term. Working

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on the VCoP's objectives may be easier. A compromise must be found between direct value to the members and importance to the organization. Secondly, in order to counteract the obstructive effects of structuring characteristics, management can take decisive actions that will facilitate a VCoP's launching. While these management actions were not the focus of this study, our results showed that the choice of the community leader and the free time s/he has to take care of the VCoP's activities are management decisions that can reduce the obstructive effects of structuring characteristics. Other forms of management action include giving members time to participate in the VCoP during their work hours, recognizing their contributions, and actively promoting the VCoP's success. Management support, as advocated by many authors (McDermott and O'Dell, 2001; Wenger and Snyder, 2000), must be directed at actions and decisions that will alleviate these obstructive effects. Senior executives must get involved, investing time and resources to promote, nurture, and protect VCoPs (Wenger and Snyder, 2000). Creating active support is central to the success of VCoPs at the early stages and, from this standpoint, the role of senior management is absolutely critical (Drucker, 1999).

Other results may be both surprising and enlightening. The literature often recommends building new CoPs on already existing informal networks (e.g. Wenger et al., 2002). It is assumed that these networks will provide a solid basis for a new CoP. This may be true for traditional CoPs, but does not seem to be the case for our VCoPs. In three cases (K. L. and M), it was clear that informal networks existed prior to the VCoPs and people did not see the added value of changing their habits of communicating on a one-to-one basis through e-mail or by phone. Members were already successful and had no incentives to share knowledge on a broader and more open basis. Members of VCoP E, who successfully went from being a face-to-face CoP to a VCoP, saw the added value of going virtual, but stated that the end of their face-to-face meetings every six weeks would probably mean the end of their community. They saw the technology as an additional tool to support their face-to-face community and did not see themselves as a virtual community. Going from traditional to virtual does not seem to be an easy step. In their research on communities of practice in a distributed international environment, Hildreth et al. (2000) show the importance of face-to-face meetings to help VCoP members develop relationships more quickly and to build momentum. These meetings helped solve/negotiate issues of identity early in the process. From this study and the findings of our research project, the face-to-face element seems to be necessary at the launching stage in order to stimulate the socialization process.

Another interesting finding is related to the lack of impact of members' enrollment. It was expected that VCoPs with voluntary members would be more successful than ones, where members were "forced" to participate. According to our data, this is not the case. Out of the ten VCoPs with voluntary members, half succeeded and half failed. This structuring characteristic by itself does not seem to explain the success or failure of the VCoPs at the launching stage. Compulsory participation remains a strange concept in the context of a VCoP. A new member in the organization can gain a lot from reading responses to a newsgroup and documents while his or her passive participation goes unnoticed.

Finally, one may wonder if the results vary by sector or would have been the same in a traditional CoP versus a VCoP. Analysis of our data showed that the sector cannot

be used to explain success or failure at the launching stage since successes and failures are evenly distributed across sectors. With respect to ICT, in two specific cases (M and O), ICT was used as a scapegoat to explain the lack of success of the VCoP. However, further investigation showed that, in both cases, the concerns expressed were trivial and could have easily been resolved or taken care of if the VCoP had received real managerial support.

Concluding remarks

Despite the benefits that VCoPs may provide to organizations, this study shows that intentionally forming them is not an easy process. Technological developments, such as the internet, network security, and collaborative software, have opened up a world of possibilities for organizations to reinvent themselves – but, as was shown in this paper, identifying a group of people and implementing ICT does not necessarily lead to success.

VCoPS are likely to drastically disrupt the status quo by questioning and straining the social, cultural and political systems deeply ingrained in organizations. In an increasingly global world, where VCoPs may extend beyond organizational and national boundaries, these challenges may be even more acute. Hofstede (1993) shows how different cultures have very dissimilar conceptualizations of management, leadership, autonomy, priority and focus, decision-making, and relationships among people. Bringing together highly diversified cultures within a VCoP would be highly enriching, but would also require an immense effort to integrate members with different systems of perception, meaning, values and belief. A variety of national cultures often also comes with a variety of languages, amplifying problems of communication and collaboration (Townsend *et al.*, 1998).

We have shown that VCoPs have differentiating structuring characteristics that can be used to group and compare them, but this may also explain why some succeed while others fail. This highlights the need for a contingency approach in research and practice. Further research should investigate in more detail the actions management can take to counteract the obstructive impact of structuring characteristics at the different stages of development of virtual communities of practice. The results would help managers set up a change management strategy adapted to the specific characteristics of their VCoPs, increasing their chances to be successful.

While our study goes one step further in understanding the launching of intentionally-created VCoPs, results are still at a very embryonic stage. Our exploratory study should be followed by research investigating a larger number of VCoPs if we are to better understand the impact of structuring characteristics on the lives of VCoPs. The next step will also be of utmost importance. Increasing our understanding of VCoPs rests on the identification of factors that will drive their sustainability. Factors crucial at the launching stage may also prove to be important later on in the life of a VCoP. A changing environment, a topic that is no longer as relevant as it once was, a new sponsor that does not give the VCoP the same level of priority, a leader who is too busy with his daily work to take care of the VCoP as he used to, an increased awareness of the lack of sophistication of the tools used, and a reduced budget that precludes the organization of regular face-to-face events may have an impact on the VCoP's chances of success over time. VCoPs are just one of the instruments organizations can use to effectively manage knowledge in organizations,

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but their full benefits will not be reaped until we know more about how they can be successfully launched and sustained.

References

- American Productivity and Quality Center (APQC) (2001), *Building and Sustaining Communities* of *Practice: Continuing Success in Knowledge Management*, American Productivity and Quality Center, Houston, TX.
- Ardichvili, A., Page, V. and Wentling, T. (2003), "Motivation and barriers to participation in virtual knowledge-sharing communities of practice", *Journal of Knowledge Management*, Vol. 7 No. 1, pp. 64-77.
- Ashkenas, R., Ulrich, D., Jick, T. and Kerr, S. (1995), *The Boundaryless Organization*, Jossey-Bass, San Francisco, CA.
- Bridges, W. and Mitchell, S. (2002), "Leading transition, a new model for change", in Hesselbein, F. and Johnston, R. (Eds), On Leading Change, Jossey-Bass, San Francisco, CA, pp. 33-45.
- Brown, J.S. and Duguid, P. (1991), "Organizational learning and communities-of-practice: toward a unified view of working, learning, and innovation", *Organization Science*, Vol. 2 No. 1, pp. 40-57.
- Brown, J.S. and Duguid, P. (2001), "Structure and spontaneity: knowledge and organization", in Nonaka, I. and Teece, D.J. (Eds), *Managing Industrial Knowledge: Creation, Transfer* and Utilization, Chapter 2, Sage, London, pp. 44-67.
- Cothrel, J. and Williams, R.L. (1999), "Online communities: helping them form and grow", *Journal* of Knowledge Management, Vol. 3 No. 1, pp. 54-60.
- Cramton, C.D. (2001), "The mutual knowledge problem and its consequences for dispersed collaboration", *Organization Science*, Vol. 12 No. 3, pp. 346-71.
- Drucker, P. (1999), Management Challenges for the 21st Century, HarperCollins, New York, NY.
- Dubé, L., Bourhis, A. and Jacob, R. (2003), "Towards a typology of virtual communities of practice", *Cahier du GReSI*, No. 03-13, November, HEC Montréal, Montréal.
- Fontaine, M. (2001), "Keeping communities of practice afloat", *Knowledge Management Review*, Vol. 4 No. 4, pp. 16-21.
- Gongla, P. and Rizzuto, C.R. (2001), "Evolving communities of practice: IBM Global Services experience", *IBM Systems Journal*, Vol. 40 No. 4, pp. 842-62.
- Handy, C. (1995), "Trust and the virtual organization", *Harvard Business Review*, Vol. 73 No. 3, pp. 40-50.
- Hayes, N. (2001), "Boundless and bounded interactions in the knowledge work process: the role of groupware technologies", *Information and Organization*, Vol. 11, pp. 79-101.
- Hellstrom, T., Kemlin, P. and Lalmquist, U. (2000), "Knowledge and competence management at Ericsson", *Journal of Knowledge Management*, Vol. 4 No. 2, pp. 99-110.
- Hildreth, P., Kimble, C. and Wright, P. (2000), "Communities of practice in the distributed international environment", *Journal of Knowledge Management*, Vol. 4 No. 1, pp. 27-38.
- Hofstede, G. (1993), "Cultural constraints in management theories", *Academy of Management Executive*, Vol. 7 No. 1, pp. 81-94.
- Jurie, J.D. (2000), "Building capacity, organizational competence and critical theory", Journal of Organizational Change Management, Vol. 13 No. 3, pp. 264-74.
- Lesser, E. and Everest, K. (2001), "Using communities of practice to manage intellectual capital", *Ivey Business Journal*, March-April, pp. 37-41.

JOCM	Lesser, E.L. and Storck, J. (2001), "Communities of practice and organizational performance", <i>IBM Systems Journal</i> , Vol. 40 No. 4, pp. 831-41.
10,2	Loebbecke, C. and Wareham, J. (2003), "The impact of ebusiness and the information society on 'strategy' and 'strategic planning': an assessment of new concepts and challenges", <i>Information Technology and Management</i> , Vol. 4 No. 2/3, pp. 165-82.
166	McDermott, R. (1999), "Why information technology inspired but cannot deliver knowledge management", <i>California Management Review</i> , Vol. 41 No. 4, pp. 103-17.
	McDermott, R. (2000a), "Knowing in community", IHRIM Journal, March.
	McDermott, R. (2000b), "Community development as a natural step", <i>Knowledge Management Review</i> , Vol. 3 No. 5, pp. 16-19.
	McDermott, R. and O'Dell, C. (2001), "Overcoming cultural barriers to sharing knowledge", Journal of Knowledge Management, Vol. 5 No. 1, pp. 76-85.
	Miles, M.B. and Huberman, A.M. (1994), <i>Qualitative Data Analysis: An Expanded Sourcebook</i> , Sage, Beverly Hills, CA.
	Perin, C. (1991), "Electronic social fields in bureaucracies", Communications of the ACM, Vol. 34 No. 12, pp. 75-82.
	Storck, J. and Hill, P.A. (2000), "Knowledge diffusion through 'strategic communities", Sloan Management Review, Vol. 41, pp. 63-74.
	Swan, J., Scarbrough, H. and Robertson, M. (2002), "The construction of 'communities of practice' in the management of innovation", <i>Management Learning</i> , Vol. 33 No. 4, pp. 477-96.
	Townsend, A.M., DeMarie, S.M. and Hendrickson, A.R. (1998), "Virtual teams: technology and the workplace of the future", <i>Academy of Management Executive</i> , Vol. 12 No. 3, pp. 17-29.
	Tushman, M.L. and O'Reilly, C.A. III (1997), Winning through Innovation: A Practical Guide to Leading Organizational Change and Renewal, Harvard Business School Press, Boston, MA.
	von Krogh, G. (2002), "The communal resource and information systems", <i>Journal of Strategic Information Systems</i> , Vol. 11, pp. 85-107.
	Wenger, E.C. and Snyder, W.M. (2000), "Communities of practice: the organizational frontier", <i>Harvard Business Review</i> , Vol. 78 No. 1, pp. 139-45.
	Wenger, E., McDermott, R. and Snyder, W.M. (2002), <i>Cultivating Communities of Practice</i> , Harvard Business School Press, Boston, MA.

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Technology innovation-induced business model change: a contingency approach

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Abstract

Purpose – To construct and test, through its application to a real case study, a methodology that generates contingencies for the evolution of a company or an industry's reference business model (BM) under the impact of a technology innovation.

Design/methodology/approach – The paper draws on theoretical predicaments of organizational development and scenario planning as well as more recently published works (2001-2004) on BM design and change in order to build the primary steps of the methodology. A contingency approach is applied for selecting among alternatives the most suitable future BM. The usefulness and applicability of the provided methodology are proved through a real case study that concerns changing the exhibition's industry reference BM under the impact of a mobile innovation.

Findings – The proposed methodology is primarily useful in cases where a strategic manager wishes to draw and assess not one totally new BM but a set of scenarios that reflect alternative configurations for its current BM evolution. Such a methodology needs to be complemented with a contingency framework for guiding the selection of the scenario that better suits the internal and external environment of the company.

Research limitations/implications – It is expected that related theories, such as the theory of Industrial Organization and the theory of Network Economics, also need to be examined under the light of BM change to identify and cross-validate factors that contribute to the design and assessment of BMs.

Practical implications – The ultimate utility of the proposed methodology is as a road-map for leading change in the value-creation logic of a firm, taking advantage of an advanced technology solution. By continuously changing their BM, and identifying new ways to deliver value to their customers, firms aspire to obtain and sustain a competitive advantage in high-velocity environments.

Originality/value – This paper fulfils an identified research gap for a structured approach towards changing the BM of a firm, which introduces a technology innovation by keeping the principles of the old (traditional) business logic and taking into account the effects incurred from the firm's internal and external environment.

Keywords Business environment, Change management, Innovation

Paper type Research paper

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IOCM Introduction

Under the influence of technology trends, most importantly information and communication technologies (ICT), many current organizational business models (BMs) are being questioned, and companies are faced with the challenge of BM change. However, creating a radically new BM is a high-risk strategy, as the probability of getting it right is acknowledged to be low (Kalakota and Robinson, 2001). Companies typically choose to focus on an improvement strategy that is less risky and extends or renews their existing strategy and BM.

Even in the case of BM evolution, however, the process is not risk-free. Arguably the complexity of the ICT landscape makes it almost infeasible for any single business entity to possess the necessary array of competencies that will allow it to provide an end-to-end solution. Thus, alliance management, revenue sharing, and transparent cooperation become critical factors for success. Those companies with the ability to create business-to-business relationships without conflicts of interest are the ones' most likely to succeed (Paavilainen, 2002). A BM must explicitly account for the need for partnership and provide the best possible answers to questions regarding the type of value that each partner will contribute based on its core competence, the distribution of revenues and profits between them, the type of service offerings, and the business structures that will be required to implement the changes (Rulke *et al.*, 2003).

Existing research on defining structured methodological approaches for BM change is rather fragmented. Most efforts are applicable only under certain business conditions, they are typically dependent on the codification used for BM components, and mostly provide a general framework rather than a stepwise methodology that can guide a BM evolution process. This paper aims to fill this gap by proposing a stepwise methodology allowing companies to design alternative scenarios for BM evolution or extension under the impact of technology innovation. The proposed methodology constitutes the result of research that synthesizes and improves existing literature in the area by combining it with insight gained through a real-life case study in a multinational setting. The methodology is based on the identification of scenarios that depict possible changes to the current value chain and BM of an industry. Scenario-based BM development is the primary novel characteristic of the methodology, in line with recent research that argues in favour of scenarios as an efficient strategy design method in uncertain and complex business environments (Mylonopoulos et al., 2002; Kulatilaka and Venkatraman, 2001). Further to scenario planning, the proposed methodology is also complemented by a novel contingency approach that draws on organizational theories to propose firm-specific and industry-related factors that can act as metrics for choosing among scenarios.

Background theory incorporated in this paper involves analysis and critique of prevailing theoretical approaches to BM changes. The section that follows the background theory outlines the proposed methodology for BM evolution under the influence of technology innovation. The methodology is complemented by a set of firm-specific and industry-related contingency factors that affect the feasibility and likelihood of success of alternative BMs under different industry settings. The paper continues with applying the proposed methodology and contingency approach in a case study of the exhibition industry, where the introduction of a mobile application, named mobile exhibition guide, is used to draw scenarios for BM change. Finally, the

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paper concludes by putting forward implications of our findings for practitioners and future researchers.

Background theory

While the necessity and complexity of business change have long been documented in the literature, it is only recently that researchers have started focusing their attention on BM change and its specificities (Pateli, 2002). Petrovic et al. (2001) and Auer and Follack (2002) have proposed a methodology for BM change that is based on the three learning stages of Senge and Sterman (1994) as well as a number of system theories, such as system dynamics. The methodology includes seven steps, grouped into three stages, for moving from the current to the future BM (Table I).

In a similar vein, Kulatilaka and Venkatraman (2001) suggest an options approach for designing an IT strategy and defining BMs based on the capabilities of the firm and the evolving conditions in the marketplace. This approach provides a company with flexibility in adopting new technology and changing its BM. Based on this approach, Kulatilaka and Venkatraman (2001) propose the following three steps to invest in new technology:

- (1) Assess opportunities for change and consider ways to exploit these opportunities.
- (2) Acquire options, which includes mixing options reflecting the likeliest opportunities and the future scenarios for the company and the marketplace.
- (3) Act on options, which involves deploying additional capabilities, restructuring the company, reassessing its partnerships, and generally making the necessary adjustment to its BM in order to gain the advantage of the option's promised opportunities.

Following a different path, Pramataris et al. (2001) employ a set of analytical tools to facilitate BM change under the influence of digital interactive television in the advertising industry. They present their work in the form of a sequence of ten steps, each of which makes reference to both the data-collection method and the theoretical/analytical constructs employed (Table II).

Although all these methods provide valid starting points for addressing BM change, they all share a common drawback: they are quite monolithic, in the sense that they provide a strict linear sequence of steps that an organization should follow, when

Stage	Steps	
Understand	a. Identify the BM from different angles b. Identify the key factors of the BM	
	c. Model the core reinforcing and balancing feedback loops d. Expand the BM to the full network	
Identify technology's influence		
Change	g. Develop an action plan	Table I.
Source: Petrovic et al., 2001; Auer	Stages of improving BMs	

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JOCM 18,2	Ten steps for the derivation of a new BM
-)	1 Examining the relationships developed by key players currently in the market
	2 Defining current business objectives for each key player
	3 Identification of current value flows in the marketplace
	4 Identification of key competitive drivers in the market
170	5 Synthesis of the current BM
170	6 Embedding the innovative technology framework into the current BM
	7 Defining the requirements for technological capability development for the existing key players
	8 Defining the mediating functions performed by the service provider
	9 Developing a new cooperation scheme in the marketplace: exploiting the existence of the new service provider
Table II.	10 Synthesis of the proposed BM
The IMEDIA	
methodology	Source: Pramataris <i>et al.</i> , 2001

approaching BM change as a result of a technology innovation. As such, these methods might be more appropriate in relatively stable industry settings, where a lower level of risk might be associated with BM change.

However, when considering more turbulent and complex contexts, such as the emerging market of mobile and wireless communications that is dealt with in the case study discussed later in this paper, such methods might not yield satisfactory results. In this paper, we advocate the use of scenarios as a more appropriate means for approaching BM change. Scenario planning (Bloom and Menefee, 1994; Godet, 2001) has long been used in management science and is acknowledged to support more flexible decision-making and less risky strategic positioning against alternative "futures".

In the following section, we discuss a methodology for incorporating scenarios in BM change design efforts.

A scenario-based methodology for BM change

This section outlines the proposed methodology for BM evolution under the influence of a technology innovation. The discussion of the proposed methodology is made through a description of the primary steps and their contribution towards the final goal, which is the design of a set of alternative future BMs in the form of scenarios. Having resulted from a systematic work on synthesizing existing literature, the proposed methodology combines the following features:

- It is based on the three-phase model advocated by Petrovic *et al.* (2001) and Auer and Follack (2002) (Table I).
- It follows the approach of Kulatilaka and Venkatraman (2001) for defining scenarios as an intermediate step between the design of the current and future BMs.
- It uses and revises several steps of the iMEDIA methodology (Pramataris *et al.*, 2001) for the design of a future BM (Table II).

However, the proposed methodology also extends the existing research in the field by incorporating two novel features. First, the design of future BMs is based on the identification of a set of scenarios for alternative cooperation schemes among the involved

parties. Second, the methodology includes an analysis of the resulting BMs in terms of components, following the BM framework proposed by Pateli and Giaglis (2003).

The methodology consists of three phases, which are further decomposed into six steps. Figure 1 shows the steps of the methodology in correspondence with the three key phases identified in the BM evolution process. In what follows, we briefly discuss the primary mission and anticipated result of each phase and describe the steps included in it.

Phase I: understand

The first phase is concerned with a detailed analysis and documentation of the existing BM. Such analysis is required to gain an in-depth understanding of the current situation and establish benchmarks against which technology innovation impacts can be assessed. The need to anchor business change efforts on carefully documented models of the existing situation is well grounded in change management literature (Davenport and Stoddard, 1994).



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Figure 1. A scenario-based methodology for BM change Step 1. Document the current BM. The initial step of the methodology includes depicting the current business environment with the aid of a BM analysis framework, such as those proposed by many researchers in the field (Gordijn and Akkermans, 2001; Weill and Vitale, 2001; Osterwalder and Pigneur, 2002; Hamel, 2000; Pateli and Giaglis, 2003). The final outcome is a BM construct that can be used for understanding the key elements of a specific BM and their relationships, communicating and sharing the understanding of the business between business and technology stakeholders, specifying valid requirements for technology innovation, and identifying options for changing and extending the current BM.

Phase II: identify technology's influence

This phase is concerned with assessing the impact of technology innovation on the current BM. The anticipated result is the identification of possibilities for evolution or extension of the current BM. This phase includes the following steps.

Step 2. Assess the influence of technology innovation. This step includes an identification of the benefits and impacts that a given technological solution brings to key elements of the BM and a specification of the changes imposed on the current BM's structure. Such analysis is important so that changes can be better planned to fully exploit the capabilities of the proposed technology innovation.

Step 3. Identify missing roles. This step includes an identification of the requirement for one or more new roles that accomplish new business functions, and a description of the activities and the functions of each of these roles. As argued earlier, no organization is expected to have the necessary competencies to provide end-to-end services on its own. Therefore, organizations will need to enter into cooperations and alliances, typically with high-tech firms that bring in the necessary competencies in managing and exploiting the technology components of the future BM. This step calls for a systematic approach towards identifying the missing competencies so that the right partnerships can be formed.

Phase III: change

This phase is concerned with the design and description of the future BMs. This phase ends at visualizing the new BM through the design of the transformed value network. The steps included in this phase are as follows.

Step 4. Define scenarios. Having identified and justified the need for one or more new roles, this step includes defining a set of scenarios, each of which proposes a different cooperation scheme and way of distributing responsibilities between new and existing players in the new business environment. This step is key to the methodology as it enables organizations to "experiment" with alternative BM propositions, explore their implications, and proceed cautiously towards the design of the future BMs. Minimizing the risk associated with partnership management, for example, is hypothesized to lead to less risky and more successful BM change.

Step 5. Describe the new BMs. Based on the scenarios identified at the previous step, this step revisits the current business situation as illustrated in the current BM (Step 1). This step aims to describe one or more BMs by indicating the value provided by each player in the future model, as well as defining financial and communication flows among players.

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Step 6. Evaluate the impact of changes. This step is not included in prior works in the area. However, it is considered necessary to conclude the proposed BM description by estimating the impact of the transformed BM on the structure and dynamics of the markets concerned. This step effectively links the methodology to subsequent change implementation programs (which are outside the scope of this paper), as it defines the metrics by which alternative BMs will be evaluated.

Although the aforementioned steps define a well-grounded methodology for BM change under the impact of technology innovation, they are by no means sufficient on their own to guide the BM design effort. Effectively, what is missing is an analysis of how organizations should pick and choose, from the scenarios developed, the one that will become the future BM. To this end, the methodology needs to be complemented by a contingency approach allowing for comparative evaluation of scenarios based on firm-specific and industry-related factors.

A contingency approach for assessing scenarios

It is of course expected that, in practice, more than one BM for the exploitation of a technology innovation will be applicable in different markets depending on their unique characteristics. In this section, we contend that the final scenario that will guide the development of future BMs will be determined by a number of factors affecting the organization, both external (industry-related) and internal (firm-specific).

Recent research work on strategy theory has recognized three primary types of effects on firm performance. These include strategy, industry, and firm-asset (or resource-based) effects. This three-dimensional framework, tested under empirical data (Spanos and Lioukas, 2001), results in supporting arguments that consider both industry-related and internal (combining strategy and firm-asset) influences as significant determinants of performance (Henderson and Mitchell, 1997). Researchers have recently started to address the link between BMs and strategy theories. Hedman and Kalling (2003) propose integrating the three aforementioned strategic perspectives in the definition of a conceptual BM that includes: customers and competitors (industry), the offering (generic strategy), activities and organization (the value chain), the resource base (resources), and the source of resources and production input (factor markets and sourcing), as well as the process by which a BM evolves (in longitudinal processes affected by cognitive limitations and norms and values).

Based on this analysis, we have developed a series of factors favouring scenarios for BM development by the combination of industry-related and firm-specific factors. These factors include the following:

- (1) Industry-related factors:
 - *Industry structure*. This factor addresses whether the market in which the redesigned BM will be introduced is either monopolistic/oligopolistic or highly competitive.
 - Balance between transaction costs and costs of internal development. This factor addresses the costs of contracting partnerships with third parties to provide the technology innovation in comparison with the costs incurred in case of internal development of the required capabilities and resources (Li and Whalley, 2002).

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- *Type of players*. This factor examines whether private or public organizations dominate the market. This distinction may be declarative of the participants' motivation and strategic incentives for applying a technology innovation and thus differentiating themselves from competition.
- (2) Firm-specific factors:
 - *Strategic objectives.* This factor concerns the firm's strategic focus and the alignment between the internal strategic goals and the expectations for the impact of the technology innovation.
 - *Firm capabilities and assets.* This factor contributes to the assessment of the firm's position in the market and the identification of the market segments that it targets. Current capabilities and future intentions for capability development will dictate the degree to which the firm is prepared to internalize or outsource certain technology-dependent activities.

In order to increase the understanding of the use and utility of such a contingency approach, as well as validating and extending the proposed methodology for BM evolution, the next section discusses a real-life case study, involving the commercialization of a mobile application, named mobile exhibition guide, by players in the exhibition and information technology industries.

Case study: effects of mobile business in the exhibition industry

Description of the mobile exhibition guide

The validity and utility of the proposed method, as well as the implications of scenario planning for BM change, have been tested through a multinational case study conducted simultaneously in Greece and Finland. The study was part of a research project supported by the European Commission that aimed to exploit the technological opportunities arising from evolution in the areas of wireless networks and indoor positioning technologies to support the professional exhibition industry in a context-aware manner. The project's goals were to enhance visitors' experience in terms of interaction and functionality in an information-rich environment such as an exhibition show; improve business communications and promotions within the exhibition; extend promotional effectiveness after the exhibition; and assist and support exhibition management by offering real-time location information about people inside the exhibition area. To this end, the project developed a mediation software platform, namely a mobile exhibition guide, running currently on PDA devices but with plans to include smart-phone devices later.

Based on a number of user behavioural requirements drawn from visitors, exhibitors and organizers (which are documented in more detail in Fouskas *et al.*, 2002), the mobile exhibition guide is designed to provide the following services (Table III), listed per type of user.

The introduction of such technological capabilities is bound to fundamentally transform today's prevailing BM in the exhibition industry. Hence, industry stakeholders (most notably, exhibition organizers) have initiated a debate regarding the changes to be introduced in the current *modus operandi* of the industry and the partnerships that need to be developed in order to exploit the benefits of the mobile exhibition guide. To this end, the methodology discussed in the previous section has been employed to guide the BM evolution design effort.

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Visitor services	Exhibitor services	Organizer services	A contingency
Online and on-site registration	Online content management (products, stands)	Information on profile and preferences of visitors	approach
Personalized and location-aware navigation plan	Exchange of "virtual business cards" with visitors	Online content management of information (profile, whilition info)	
Routeing advice	Real-time information and history statistics on visitor behaviour	Common and targeted announcements to exhibitors and visitors	175
Exchange of "virtual business cards" with exhibitors "Bookmark" stands and exhibits for receiving more information Interaction within a user group Receiving targeted messages (offers, announcements) from exhibitors and	Promotion of their exhibits via targeted spots Notifications to organizers in emergency cases	Real-time information on visitors' position History statistics on visitor flows and behaviour Online feedback from visitors	
organizers Message board for communication with other visitors			Table III.Mobile exhibition guide's services per user

Application of the proposed method

Step 1: document the current BM. The first step was to document the current business situation in order to define realistic business requirements for the design of the mobile application and to outline the business environment in which it will be introduced. This analysis included a detailed description of industry norms, types of stakeholders involved, partnerships, revenue-sharing agreements, and so on. Owing to space limitations, only the analysis of roles is presented herein.

The key roles identified in the exhibition business environment include:

- (1) Hall owners, who provide the physical infrastructure.
- (2) *Organizers*, who provide the service platform for efficient interaction between the exhibitors and the visitors.
- (3) *Exhibitors and parallel event organizers*, who use exhibition events as marketing tools.
- (4) *Visitors and event participants*, who receive the services of exhibitors and organizers.
- (5) *Support service providers*, who make available various services to organizers including security, cleaning, and electronic equipment.
- (6) *Media partners* providing media coverage of the event and publicity to organizers and exhibitors.
- (7) Sponsors providing capital in return for leveraging their brand.

The primary business relationships of this model are shown in Figure 2 (the numbers indicate types of flows among roles, the analysis of which goes beyond the scope of this paper).

Step 2: assess the influence of technology innovation. This step included a definition of the benefits arising from the introduction of the mobile application to the concerned



parties, and a discussion of the elements of the current BM that are most likely to change due to technology innovation (mEXPRESS D6.1, 2003). A list of potential benefits of using the mobile exhibition guide to the primary stakeholders of the exhibition industry is presented in Table IV.

This step also aims to identify those elements of the current BM which will be most affected by the technology innovation. Based on the theoretical investigations in the area of technology innovation and also a series of discussions with key stakeholders, mainly the exhibition organizers participating in the project, several effects of this

	Exhibition players	Benefits
	Hall owner	New value-added service offered through their premises Ability to use the installed technology infrastructure for offering other wireless services
	Organizer	Online collection of feedback from visitors Ability to collect online data on visitors' profile and behaviour in the form of anonymous statistics Dynamic segmentation of visitors based on their profile and behaviour Ability to collect data on exhibitors' performance Better management of exhibition space and people
	Exhibitor	Effective marketing and management of exhibitions using the statistical data produced by mEXPRESS Access to anonymous data on visitors' profile, preferences and behaviour in order to improve their understanding of their customers Effective targeting and promotions New channel for promotions and offer making Possibility of applying dynamic pricing mechanisms based on real-time
Table IV. Expected benefits for the key players in the exhibition industry	Visitor	statistics Effective spotting of suppliers/products of interest Efficient navigation in the exhibition hall space Load-saving from transferring material in digital rather than paper format Increased convenience in the overall visiting experience

technology innovation on the current BM's elements have been specified and are briefly described in Table V.

Step 3: identify missing roles. The roles identified in Step 1 have been found inadequate to supply the competencies needed to support the mobile application. More specifically, the need for one or more new player(s) accomplishing the following groups of activities was recognized:

- *Infrastructure installation and maintenance*, including functions for defining the requirements for, installing, and maintaining the networking and positioning infrastructure, as well as any other hardware required to support the mobile mediation platform.
- *Software configuration and support*, including functions for configuring and administrating the mobile software application.
- *Content syndication, management and delivery.* Syndication refers to "selling the same information to many different customers, packaging it with other offerings in uniquely valuable ways, and then redistributing it" (Werbach, 2000). In this case, syndication concerns packaging the information produced, such as statistical reports, with other offerings, such as visitors' profiles, and then customizing it to the requirements of different users such as exhibitors and organizers.

Step 4: define scenarios for alternative BM configurations. Based on a diverse distribution of responsibilities and roles between the existing and/or new players, a number of change options, considered hereinafter as scenarios, were generated. Simply defined, a scenario is a description of a possible or probable future for either an organization or a whole industry (Bloom and Menefee, 1994). Scenarios can be quite broad in scope, thus describing actors, market trends and pricing strategies, and aiming at guiding future organizational strategies, policies and activities. Scenarios are not forecasts or predictions. They are only possibilities of the future (Van der Heijden, 1996). Based on scenarios, decision- and strategy-makers are able to better formulate their innovative business ideas in future environments.

The scenarios that are described hereinafter concern alternative configurations of players belonging in the exhibition industry, but also in the ICT industry for commercializing the mobile exhibition guide in the future. These scenarios have been defined in a number of brainstorming sessions with the participation of all project participants and structured interviews with key actors and domain experts of the exhibition industry. Based on this analysis, two final scenarios were developed for further consideration:

(1) The market maker (MM) scenario. This scenario concerns the development of a partnership between an independent body – a third party – and one or more hall owners, playing in common the role of the mobile exhibition service provider (m-ESP). These two bodies make some sort of partnership (most likely an outsourcing agreement) to jointly provide mobile exhibition services. They then provide the service to exhibitions. Organizers, in turn, can provide the service to exhibitors that typically pay an increased booth rental price and are in turn able to provide value-added services to visitors.

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JOCM 18,2	Major effects of the mobile application	Description of changes on BM elements
	Enhanced value proposition	For organizers: facilitation of exhibition management and collection of value-added data, such as the location data for persons within the exhibition
178		For exhibitors: extending promotional effectiveness during and after the exhibition by targeting their customers; ability to collect anonymous data from organizers on visitors' behaviour
		For visitors: ability to control the push of information and advertising material; receiving contextual information based on their location and interests
	Redefinition of market scope	The services offered by the mobile application are anticipated to target more technology-familiar visitors as well as exhibitors belonging to high-tech industries
	New actors/roles and	The installation and operation of the mobile software and
	redistribution of	infrastructure require some special capabilities that none of the
	responsibilities	existing players possesses. Therefore, there is a need for new roles being responsible for the technical and operational management and current of the mehile platform
	Redefinition of relationships	As the roles and responsibilities are redistributed between the existing and the new players belonging to the exhibition or the ICT industry, new types of partnerships or inter-organizational relationships are
		expected to develop
	Increase of actors' capabilities and assets	<i>Hall owners</i> : obtain an advanced infrastructure to be used for the provision of the mobile exhibition services and other location-based services
		Organizers: acquire access to a pool of anonymous data regarding visitors and exhibitors <i>Exhibitors</i> : request and gain access to a segment of these data, which is useful for assessing their performance in the exhibition and
		improving their future appearance
	New cost structures and	<i>Visitors</i> : acquire an additional capability for managing their visit The cost of providing the mobile application is charged to the actor
	revenue streams	it to other service providers. The main parameters of this cost are: the cost of software development and support; and the cost of hardware purchase, installation and maintenance. Further cost parameters
		include the cost of providing the service and supporting the actors who use it. To balance this cost, new revenue sources appear, such as increase of fixed price paid by exhibitors for the booth rental, increase in ticket price paid by visitors sponsorships price of special mobile
		advertising services for exhibitors, and price of information to exhibitors or third parties
	New way of conducting key activities	Several key activities and market processes of the current BM are subject to change as a result of their delivery through the mobile platform. Specifically, the preregistration and registration processes are conducted via laptop or PDA from anywhere at any time.
Table V. Effects of the mobileapplication on the BM of		Customer requests are sent in real time through either visitor's PDA or exhibitor's laptop. Promotions and advertising are also made online and in real time, while the online collection of data and feedback replaces the time-consuming process of market research during and
the exhibition industry		after the exhibition

(2) The *full service provider (FSP)* scenario. According to this scenario, the overall responsibility for both technology infrastructure support and service provision and management belongs to the hall owner, who usually also acts as exhibition organizer. Hall owners acquire the mobile exhibition guide service package (including technology infrastructure and software) from its developer; however, they do not enter into a formal partnership with them.

Drawing on the firm and industry-specific factors that were identified in the discussion of the contingency approach in the previous section, Table VI outlines contingencies for the dominance of each scenario.

Step 5: analyze the key elements of alternative BMs. The above scenarios describe alternative configurations (players and relationships) that could support the commercialization of mobile services in the exhibition industry. As such, they lay the groundwork for exhibition players, mainly exhibition centre owners and organizers, to think about alternative business ideas (models) and, under the conditions of each scenario, about how to achieve their strategic objectives. Each scenario can lead to the development of one or more alternative BMs by assigning real-world organizations to the scenario's actors and discussing in detail issues regarding the value proposition of each actor, the partnerships developed among all actors, the key resources contributed by each, their revenue-sharing agreement, etc. Hereinafter, due to space limitations for analyzing a set of alternative BMs implementing each scenario, the paper has focused on formulating two general but representative BMs, naming each one based on the scenario it implements. Only the major differentiation points of these BMs are described in the paper. Nevertheless, the following is a quite complete list of attributes, considered as differentiation points, which were analyzed, when describing the two alternative BMs in the mobile case study (mEXPRESS D6.1, 2003):

- · key players and distribution of roles and responsibilities;
- · core competence of each player in terms of valuable resources and capabilities;
- value network depicting the key players' relationships in terms of revenue and communication flows;
- value proposition of each player to the network as well as to the end-user;
- revenue model in terms of main revenue sources and the revenue sharing agreements among the key players; and
- critical success factors (CSFs) for the BM implementation.

Conditions favouring the MM scenario	Conditions favouring the FSP scenario	
 (a) High degree of competition (b) Transaction costs are lower than the costs of providing the service based on internal skills/ resources (c) Large number of private exhibition organizers (d) Organizers follow a differentiation strategy through the provision of value-added services 	 (a) Monopolistic or oligopolistic markets (b) Transaction costs are higher than the costs of providing the service based on internal skills/ resources (c) Few private or public exhibition organizers (d) Organizers follow a cost-leadership strategy under the concern of providing low-priced services 	Table VI. A contingency approach
(e) Organizers are separate entities from hall owners; hence they lack infrastructure assets	(e) Organizers own their own exhibition centre, thus possessing additional assets	for the new BM of the exhibition industry

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Exhibitors' and visitors' roles remain the same in both BMs. However, the two BMs imply different roles, and hence different competencies, regarding hall owners and exhibition organizers. Specifically, the MM BM includes a new third party that enters the exhibition industry value system through a partnership with a hall owner. In this BM, the concerned hall owner does not have the competence required to provide the mobile exhibition guide on its own, and thus the whole BM is based on a strategic alliance signed between the third party and the hall owner for the purpose of delivering value-added mobile services to the hall owners' clientele. Conversely, the FSP business model involves a hall owner of dominant strategic position, which either possesses, or is willing to obtain and develop, the resources and capabilities required for providing the mobile exhibition guide on its own.

The cost factors characterizing both BMs are identical and involve a once-only implementation cost for the wireless networking and positioning infrastructure, as well as a once-only purchase cost for the software, including costs for administration and support services. However, while the MM business model is based on a revenue-sharing agreement between the third party and the hall owner, who jointly act the new roles of the m-ESP, the FSP BM is financially dependent on an investment made by hall owners for providing value-added services. Each revenue model has of course different implications for the level of investment required, the impact on final prices for exhibitors, the time required to provide the service, and the risk involved with implementation and market success.

Step 6: estimate the impact of technology innovation on the external environment. The impact of the proposed BMs for the commercialization of the mobile exhibition application was specified in terms of a number of direct or indirect effects brought to bear on the exhibition industry and mobile emerging market based on Porter's five forces model (Porter, 1985). Thus, the following changes on the exhibition industry structure were noted: introduction of technology firms in the role of advanced exhibition service providers, enhancement of exhibition services with innovative features, thus increasing barriers to entry by new players, increase of organizers' bargaining power over exhibitors, rising interest by players in the horizontal value chain (complementors or competitors) in offering complementary services (e.g. access to internet provided by Wireless Internet Service Providers, on-request access to historical data about the exhibition industry provided by an Exhibition Association). The implementation and use of a mobile exhibition guide is also expected to contribute to the growth of the mobile market by enhancing the public's familiarization with wireless and mobile technologies and applications, encouraging development of more advanced mobile applications targeted to the public, and enforcing the role of service and technology providers over the dominant mobile network operators.

Conclusions and managerial implications

This research has presented a methodology for BM change under the light of commercializing a mobile technology innovation targeted to the players of the exhibition industry. The methodology has been largely based on the identification of scenarios prescribing alternative configurations for BM development. The methodology is complemented by a contingency approach that guides the selection of the scenario that better suits the internal and external environment of a company. The methodology continues to the detailed description of one or more BMs,

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corresponding to innovative business ideas, in terms of specifying real-world players for the defined structure (scenario) and analyzing the dynamic elements of their relationships (e.g. value proposition, revenue flows, negotiation power).

The research on BM evolution, further to its internal contribution in the BM research area, and more specifically to the area of changing methodologies, has also yielded considerable implications for practitioners in the business field. The proposed BM methodology targets operating managers who work in sectors facing increased challenges from technology innovation. The ultimate utility of this methodology is as roadmap for leading change in the value-creation logic of a firm taking advantage of an advanced technology solution. By continuously changing their BM, and identifying new ways to deliver value to their customers, firms aspire to obtain and sustain a competitive advantage. Managers that can better specify their BM evolution can also assure a better competitive position for their firms in high-velocity environments.

Apart from using the proposed methodology for leading change and keeping the firm ahead of competition, the suggested scenario-based methodology can be used by managers as a strategic tool in their decision-making process. In a highly dynamic and volatile environment, managers are frequently faced with the need to take quick, but prudent decisions regarding their company's actions in the short- or even long-term time horizon. In such organizational settings, managers can use the methodology for building and assessing scenarios, which reveal opportunities and threats for firms' performance, fostered by evolution in the BM map of their sector.

Future research

On the theoretical side, there is ample space for more elaboration of the findings of this paper as well as further research in BMs' correlation with other scientific disciplines. Research on BMs has lately started to fuse with research in related disciplines, most notably theories of strategy and organizational development. We expect that related theories, such as the theory of industrial organizations and the theory of network economics, also need to be examined under the light of BM change to identify and cross-validate factors that contribute to the design and assessment of BMs.

On the practical side, further research could be directed towards extending and enriching the results presented in this paper with a financial analysis made on each scenario. Although such analysis will have limited theoretical utility, as it is of course expected that cost-benefit analyses will be heavily dependent on the unique characteristics of each case and cannot be easily generalized, it is important to note the relationship between theoretical strategic perspectives and organizational financial concerns. As mentioned earlier, the case study discussed in this paper is being concurrently developed in Greece and Finland. One of the imminent steps of the case study is to explore the scenarios developed under the peculiarities of the exhibition industry in each country. The findings are expected to yield important further validation data on the contingency model presented earlier.

References

Auer, C. and Follack, M. (2002), "Using action research for gaining competitive advantage out of the internet's impact on existing business models", in Loebbecke, C., Wigard, R.T., Gricar, J., Pucihar, A. and Lenart, G. (Eds), *Proceedings of the 15th Bled Electronic Commerce*

A contingency approach

pp. 101-04.
Bloom, M.J. and Menefee, M.K. (1994), "Scenario planning and contingency planning", <i>Productivity and Management Review</i> , Vol. 17 No. 3, pp. 223-30.
Davenport, T.H. and Stoddard, D.B. (1994), "Re-engineering: business change of mythic proportions?", <i>MIS Quarterly</i> , Vol. 18 No. 2, pp. 121-7.
 Fouskas, K., Pateli, A., Spinellis, D. and Virola, H. (2002), "Applying contextual inquiry for capturing end-users' behaviour requirements for mobile exhibition services", <i>Proceedings</i> of the 1st International Conference on Mobile Business (CD-ROM). Athens, 8-9 July
 Godet, M. (2001), Creating Futures: Scenario Planning as a Strategic Management Tool, Economica Ltd. London.
Gordijn, J. and Akkermans, J.M. (2001), "Designing and evaluating e-business models", <i>IEEE Intelligent Systems</i> , Vol. 16 No. 4, pp. 11-17.
Hamel, G. (2000), Leading the Revolution, Harvard Business School Press, Boston, MA.
Hedman, J. and Kalling, T. (2003), "The business model concept: theoretical underpinnings and empirical illustrations", <i>European Journal of Information Systems</i> , Vol. 12, pp. 49-59.
Henderson, R. and Mitchell, W. (1997), "The interactions of organizational and competitive influences on strategy and performance", <i>Strategic Management Journal</i> , Vol. 18, pp. 5-14.
Kalakota, R. and Robinson, M. (2001), <i>mBusiness: The Race to Mobility</i> , McGraw-Hill Publishing Company, New York, NY.
Kulatilaka, N. and Venkatraman, N. (2001), "Strategic options in the digital era", <i>Business Strategy Review</i> , Vol. 12 No. 4, pp. 7-15.
Li, F. and Whalley, J. (2002), "Deconstruction of the telecommunications industry: from value chains to value networks", <i>Telecommunications Policy</i> , Vol. 26 No. 9/10, pp. 451-72.
mEXPRESS D6.1 (2003), "Dissemination and use plan – midterm", paper presented at the mEXPRESS Consortium, available at: http://mexpress.intranet.gr/ (accessed 10 May).
Mylonopoulos, N., Sideris, I., Fouskas, K. and Pateli, A. (2002), "Emerging market dynamics in the mobile services industry", <i>ELTRUN White Paper</i> , available at: www.eltrun.gr/ (accessed 29 October 2003).
Osterwalder, A. and Pigneur, Y. (2002), "An ebusiness model ontology for modeling ebusiness", in Loebbecke, C., Wigard, R.T., Gricar, J., Pucihar, A. and Lenart, G. (Eds), <i>Proceedings of the 15th Bled Electronic Commerce Conference – e-Reality: Constructing the eEconomy</i> , Vol. 1: Research, Bled, 17-19 June, pp. 75-91.
Paavilainen, J. (2002), Mobile Business Strategies: Understanding the Technologies and Opportunities, Wireless Press, London.
Pateli, A. (2002), "A domain area report on business models", <i>ELTRUN White Paper</i> , available at: www.eltrun.gr/ (accessed 29 October 2003).
Pateli, A. and Giaglis, G. (2003), "A framework for understanding and analysing e-business models", <i>Proceedings of the 16th Bled Electronic Commerce Conference – eTransformation</i> (CD-ROM), Bled, 9-11 June.
Petrovic, O., Kittl, C. and Teksten, R.D. (2001), "Developing business models for eBusiness", <i>Proceedings of the International Conference on Electronic Commerce</i> , Vienna, 31 October- 4 November, available at: www.evolaris.net/index_en.php/article/articleview/356/1/59/ (accessed 10 January 2004).
Porter, M. (1985), <i>Competitive Advantage: Creating and Sustaining Superior Performance</i> , Free Press, New York, NY.

Conference - e-Reality: Constructing the e-Economy, Vol. 1: Research, Bled, 17-19 June,

JOCM 18,2

pp. 767-84.

- Pramataris, K., Papakiriakopoulos, D., Lekakos, G. and Mylonopoulos, N. (2001), "Personalized interactive TV advertising: the IMEDIA business model", *Journal of Electronic Markets*, Vol. 11 No. 1, pp. 17-25.
- Rulke, A., Iyer, A. and Chiasson, G. (2003), "The ecology of mobile commerce: charting a course for success using value chain analysis", in Mennecke, B.E. and Strader, E.J. (Eds), *Mobile Commerce: Technology Theory and Applications*, Idea Group Publishing, Hershey, PA, pp. 122-44.
- Senge, P.M. and Sterman, J.D. (1994), "System thinking and organizational learning: acting locally and thinking globally in the organization of the future", in Morecroft, J.D. and Sterman, J.D. (Eds), *Modeling for Learning Organizations*, Productivity Press, Portland, OR, pp. 195-216.
- Spanos, Y.E. and Lioukas, S. (2001), "An examination into the causal logic of rent generation: contrasting Porter's competitive strategy framework and the resource-based perspective", *Strategic Management Journal*, Vol. 22 No. 10, pp. 907-34.
- Van der Heijden, K. (1996), Scenarios: The Art of Strategic Conversation, Wiley, Chichester.
- Weill, P. and Vitale, M.R. (2001), *Place to Space: Migrating to eBusiness Models*, Harvard Business School Press, Boston, MA.
- Werbach, K. (2000), "Syndication: the emerging model for business in the internet era", Harvard Business Review, Vol. 78 No. 3, pp. 85-93.

Further reading

- Linder, J.C. and Cantrell, S. (2000), "Changing business models: surveying the landscape", *White Paper*, Institute for Strategic Change, Accenture, available at: www.accenture.com/ xd/xd.asp?it = enweb&xd = _ins%5Cprojectmore_4.xml (accessed 12 October, 2003).
- mEXPRESS D1.1 (2003), "Actors' requirements framework and realistic application scenario", mEXPRESS Consortium, available at: http://mexpress.intranet.gr/ (accessed 10 May).

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Adoption of virtual organization by Taiwanese electronics firms An empirical study of organization structure innovation

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Abstract

Purpose – This empirical study aims to examine an organizational response to the needs of e-business, virtual organization, and associated determinants of its successful adoption in the Taiwanese electronics industry.

Design/methodology/approach – The research examined a large sample of Taiwanese electronics companies. A research population of Taiwanese electronics companies was drawn from firms listed on both the TAIEX and the OTC markets and included 305 firms. Questionnaires were sent to firm administrators who were asked the degree to which the company had undertaken virtual organizational structuring that was enabled by information technologies.

Findings – The findings of this research reveal significant impacts of individual and organizational factors, but no effect for environmental variables on virtual organization adoption.

Research limitations/implications – While the results might provide clues for understanding the adoption of virtual organization structure in the manufacturing sector, there still remains uncertainty in generalizing to service industries. The variety of types of service firms and their outputs makes any generalization to services from this study difficult.

Practical implications – First, information technologies may provide the potential means to implement innovative organization structures, such as virtual organization, to respond to the pressures of change. Second, the adoption and diffusion of virtual organization might transform firms to meet the demands of e-commerce.

Originality/value – The study identifies factors which may impact on the successful use of information technologies to implement innovative organization structures, such as virtual organizations, to respond to the pressures of change.

Keywords Virtual organizations, Innovation, Communication technologies, Taiwan

Paper type Research paper

Introduction

Recently, many firms have adjusted their organizational structures in response to the needs of e-business. Organizational structure change, namely altering "the formal allocation of work roles and the administrative mechanisms to control and integrate work activities including those that cross formal organizational boundaries" (Child, 1972, p. 2), is central to organizational change management. However, surprisingly few studies have examined whether and how firms respond to environmental changes such as e-business, through structural innovation.



Journal of Organizational Change Management Vol. 18 No. 2, 2005 pp. 184-200 © Emerald Group Publishing Limited 0953-4814 DOI 10.1108/09534810510589598 Virtual organization, as an important form of structural innovation, is a combination of geographically distributed, functionally and culturally diverse entities (persons and/or organizations), which are devoted to achieving a collective goal by pooling their core competencies and resources. Despite its diffuse nature, "a common identity holds the organization together in the minds of members, customers, or other constituents" (DeSanctis and Monge, 1999, p. 693). The members in a virtual organization are dependent upon information technology (IT) for the coordination of their activities. The result of a virtual organization is a firm without walls (Galbraith, 1995) that acts as a collaborative network of workers, regardless of spatial and temporal diversification (Hedberg *et al.*, 1997).

Virtual organizations have become the emerging logical organizational form when implementing business-to-business (b-to-b) e-business (Black and Edwards, 2000). Applying advanced IT, this new organizational form is highly adaptive, and well suited to changing and uncertain environments. With the establishment and development of the internet and world wide web since 1994, use of network communications has made it easier for organizations to alter and redesign their corporate structures (Boudreau et al., 1998). Although the internet enables businesses and customers to interact more frequently and conveniently, its most significant potential advantage lies in b-to-b coordination applications (Hsu et al., 2003). Strategically, the internet is not merely a new medium of communication enabling new and effective corporate processes, but it can also increase firm profits by reducing transaction and operating costs. The new form of corporate coordination among firms that has arisen from the adoption of these innovative IT-enabled organizational structures leads to institutional isomorphism within the industry (Arndt and Bigelow, 2000). Facing a competitive environment based on e-business, organizations sometimes change their structures radically or innovate using new structures to establish a competitive marketplace advantage.

This investigation conceptually and empirically addresses the adoption of virtual organization as a form of structural innovation in the Taiwanese electronics industry in response to the advent of e-business. This study differs from previous structural innovation research in two respects. First, rather than considering the new organizational form as a passive response to the environmental change, this work views structural innovation as an active process undertaken by the firm to meet consumer needs. It also views IT as both a set of tools and a source of environmental pressure for change to enhance structural innovation capabilities. Second, the potential determinants of virtual organization adoption are divided into individual, organizational, and institutional influences to analyze separately the effects on the adoption behavior (Damanpour, 1991).

Virtual organization as a form of structural innovation

From an organizational adaptation perspective, innovation refers to the "adoption of an internally generated or purchased device, system, policy, program, process, product, or service, that is new to the adopting organization" (Damanpour, 1991, p. 556). As used in this study, innovation means structural innovations undertaken by organizations. When facing changes, adopting and diffusing structural innovations is a generic form of administrative innovation undertaken to respond to environmental pressures (Kimberly and Evanisko, 1981). Structural innovation, including organizational

JOCM	restructuring, aims to "increase the efficiency and effectiveness of management
182	through significant changes in organizational structure, often accompanied by
10,2	downsizing" (Bowman and Singh, 1993, p. 6). In this study, structural innovation
	describes significant and creative structural changes that address the changing
	environment and competition (DiMaggio and Powell, 1983; Zajac and Kraatz, 1993).
	In the information age, a number of innovative organization structures have been
186	proposed by commentators or adopted by industrial organizations. Among these are
	process-based structure, modular structure, virtual organization components,
	vertically integrated electronic organizations, and virtual organizations.

Process-based structure

In research applying IT capabilities to accomplish business process redesign (BPR), Davenport and Short (1990) examined the relationship between IT and BPR and proposed a process-based structure to:

- · redesign boundary-crossing, customer-driven process; and
- generate process or operations innovation involving IT.

Manufacturing organizations adopt process-based structures along operational lines, effectively completely abandoning function, product, or geography. Since this structure cuts across departments within the organization, both high-level and wide support for new processes is required. Moving from a functional structure to an IT-enabled, consumer-oriented, process-based structure, Apple Computer adopted a version of this new informal hierarchy during the 1990s.

Modular structure

Daft and Lewin (1993) and Lewin and Volberda (1999) argued for the need to loosen organizational structure in response to radical changes. The concept of modular structure design is based on standardized component and cooperative interfaces. Modular structure, which is said to "create information structures that provide the glue that holds together the loosely coupled parts of a modular organization design" (Sanchez and Mahoney, 1996, p. 63), can continuously change and solve problems through learning and self-organization. A firm adopting the modular structure to coordinate R&D processes can connect the resources and competencies of associated organizations to respond flexibly, promptly, and cheaply to dynamic changes. This structure has the characteristics of:

- · reducing hierarchical power and management;
- · designing flexible, loose, and decomposable structures; and
- generating innovative and differentiated products, and also integrating organization strategies, knowledge, and learning.

Airbus Industrie offers a well-known example of modular structure adoption. The wing, nose, and tail of an airplane allow many components to be leveraged by the building of multiple fuselage modules at different contractor locations to build a range of aircraft.

Virtual component

To reduce transaction and inventory costs, organizations can establish components or departments that do not actually exist within the organization (Lucas and Baroudi, 1994). Outside suppliers form virtual components to organizations by using electronic data interchange (EDI) and overnight delivery systems. FedEx's eShipping system offers a good example of the real-world application of virtual components. To ensure timely delivery of parts or raw materials to the firms, FedEx adopts a unique range of eShipping tools that allow firms to efficiently prepare shipping documentation and trace shipments from the office. FedEx provides the power to control shipping activities through customized delivery solutions.

Vertically integrated electronic organization

Manufacturing firms can combine the use of virtual components and vertical integration by adopting vertically integrated electronic structures (Lucas and Baroudi, 1994). Focusing on the inter-organizational control and collaboration, this structure has properties of flexibility and production cost reduction that diminishes the risk and uncertainty of environmental and technological change. This structure may be implemented when there are:

- · significant power imbalances between organizations; and
- high dependency on EDI communication.

Toyota Motors and its parts suppliers are an example of a vertically integrated electronic organization. Toyota has the power to demand that its suppliers communicate by EDI and open up their own master production scheduling (MPS). Since it has the priority to provide parts by modifying supplier MPS, Toyota includes its suppliers in its inventory warehouse, and thus minimizes parts production and inventory costs.

Virtual organization

A virtual organization is "a collection of geographically distributed, functionally and/or culturally diverse entities that are linked by electronic forms of communication and rely on lateral, dynamic relationships for coordination" (DeSanctis and Monge, 1999, p. 693). The more organizations can provide goods independent of location and time limit, the more successful they will be in the global marketplace. Virtual organizations are combinations of multiple independent organizations separated by a broad geographical distance, which are committed to achieving aggregated goals by pooling their resources and competencies. They are also responsive to the market and customers (Davidow and Malone, 1992). Virtual organization characteristics include:

- multiple locations, which may cause problems related to culture and language differences;
- · devolution of organizational power and responsibilities;
- · acceptance of, or eagerness for, organizational change; and
- cooperation and synergy among organizations (Shao et al., 1998).

Numerous companies, including Motorola, Xerox and Wal-Mart, have successfully adopted virtual organizations during the past decade. Virtual organizations have three key advantages:

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- (1) Adaptability and flexibility.
- (2) Dependence on federation.
- (3) Spatial and temporal independence (Boudreau et al., 1998).

Limitations of the virtual structure include a lack of physical equipment, and incomplete knowledge communication (Koch, 2000).

Virtual organization operationalized: the case of Taiwan Semiconductor Manufacturing Company

Taiwan Semiconductor Manufacturing Company (TSMC), the largest Taiwanese integrated circuit (IC) firm, is a representative and innovative example of the use of virtual organization (Chang, 2003). The establishment of TSMC in 1987 represented the beginning of the semiconductor foundry industry. According to Macher *et al.* (2002), the process of vertical specialization in the semiconductor industry, which led to foundries like TSMC, began prior to the advent of e-business. However, the internet appears to be accelerating the process as a catalyst for such change.

TSMC reported annual sales of over US\$ 4 billion in 2002, and employs over 15,000 professional workers worldwide. In 1996, facing an unstable environment and fierce global competition, TSMC decided to integrate traditional b-to-b communication tools, such as letters, faxes, express deliveries, telephone calls, and meetings, and implemented its virtual foundry.

The virtual foundry, as the essence of the TSMC virtual organization, is a suite of web-based applications that provide customers real-time information on wafer design, engineering, and logistics. The systems allow customers to monitor key information through online access to electronic supply chain management (SCM), such as purchase orders, wafer in progress (WIP) reports, and so on. Introducing the virtual foundry, TSMC's web site explains that the system allows its customers to immediately understand the situation of wafer fabrication, assembly and testing. All information are updated once in every three days to three times a day. The virtual foundry includes [three?] major b-to-b e-business services: SMC-Online, TSMC-YES (Yield Enhancement System), and TSMC-Direct.

SMC-Online is the center of the virtual organization at TSMC. TSMC's customers were the first in the industry to access a secure online business transaction and information delivery system that allows them to follow their wafers through each step in the production cycle. In addition to serving as a design portal that offers an interactive view of prototypes, TSMC-Online also permits customers to:

- realize the virtual foundry vision and enable them to focus on their core competency;
- cover the complete foundry service life cycle and design/engineering/logistics collaboration; and
- have access to the lot's status and a full selection of up-to-date technical documents and information.

TSMC customers who use TSMC-YES can perform yield enhancement analyses from their workstations anywhere in the world using exactly the same tools, data, and models as those employed by TSMC engineers. The main customer benefits from TSMC-YES include:

- enabling customers to analyze process data from TSMC for yield monitoring and analysis;
- facilitating new product ramp-up as well as production yield enhancement;
- effectively communicating with TSMC by using the same analysis tool; and
- integrating with TSMC-Online through added engineering capabilities.

TSMC-Direct is a system-to-system integration between TSMC and business partners to form a mission-critical virtual organization. The result is a virtual merger that seamlessly connects process and information systems. Main customer benefits from TSMC-Direct include:

- · business process integration that promotes collaborative interactions;
- reduction of customers' inventory levels, cost and order processing cycle time;
- secure, timely and reliable information exchange; and
- near real-time availability of information associated with customers' wafers and better visibility into the entire supply chain.

Adoption of the virtual organization as structural innovation

The limited literature on virtual organization adoption has focused on the use of electronic communication and the trust among entities of virtual organizations. Both are critical aspects of the success of implementation of the structure.

Communication in a virtual organization is expected to be rapid in response to various consumer needs (Davidow and Malone, 1992). This also implies that communication in a virtual organization is likely to be changeable and unstable over time (Joyce *et al.*, 1997). DeSanctis and Monge (1999) considered that electronic communication may be useful in the successful adoption of virtual organization in four major aspects:

- (1) Highly dynamic processes.
- (2) Contractual relationships among members of virtual organization.
- (3) Edgeless boundaries.
- (4) Reconfigurable structures.

Writers have also examined the role of trust in implementation of the form. Harrington and Ruppel (1999) suggested that trust among members would help the adoption and development of virtual organizations located in several countries. In theory, trust based on knowledge and identification is the highest level of trust. However, trust development in a virtual organization also faces challenges because it is hard to evaluate members' trustworthiness without ever having seen them (McDonough *et al.*, 2001; Powell *et al.*, 2004).

Besides communication and trust issues, literature on virtual organization adoption also addresses the relationship between employee training and performance (Van Ryssen and Godar, 2000). Training of employees has been found to foster individual satisfaction and virtual organizational goals (Suchan and Hayzak, 2001).

Unfortunately, these studies offered no empirical survey in supporting the potential determinants of virtual organization adoption; furthermore, there remain some important variables that are not discussed in the literature. Since there is limited

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research on virtual organization adoption, hypotheses of this study must be framed from the more general literature on structural innovation.

Studies have examined structural innovation in organizations from varying perspectives. Tushman and Nadler (1986) indicated that innovation includes new products, services or manufacturing processes adopted by firms while, from an organizational perspective, innovation is defined as the "adoption of an internally generated or purchased device, system, policy, program, process, product, or service that is new to the adopting organization" (Damanpour, 1991, p. 556). From an organizational adaptation perspective, as used here, innovation refers to the individual, organizational and environmental factors related to technological and administrative functions. Adoption of structural innovations is an administrative innovation (Kimberly and Evanisko, 1981; Arndt and Bigelow, 1995). In examining corporate restructuring, Bowman and Singh (1993) classified three modes of restructuring: business portfolio restructuring, capital structuring change, and organizational restructuring. Structural innovation is directly related to organizational restructuring, which is intended to "increase the efficiency and effectiveness of management teams through significant changes in organizational structure, often accompanied by downsizing" (Bowman and Singh, 1993, p. 6).

In this study, structural innovation refers to significant and innovative changes in organizational structure in response to changing environmental conditions and intensifying competition (DiMaggio and Powell, 1983; Zajac and Kraatz, 1993). Innovation or structural changes may result from the pressure of internal and external sources of organization (Arndt *et al.*, 1999).

Research hypotheses

In the electronics and computer industries, IT-enabled innovative structures, especially those related to virtual organizational structure, are well developed and practiced worldwide. The advantages of virtual organization include increased flexibility and competitiveness, access to new organizational activities and new consumer relationship management, and the ability to pursue global corporate alliances and collaboration (Estallo, 2000; Black and Edwards, 2000). During the last decade, numerous scholars have sought to identify influences on innovation capacity. These scholars have continuously scrutinized the determinants of innovation activities. Addressing three important sources of individual, organizational, and contextual determinants for inducing managerial innovations (Kimberly and Evanisko, 1981; Amabile *et al.*, 1996), many variables have been singled out to test the causal relationship between variable and structural innovation. These variables represent the basis of the hypotheses on virtual organization adoption developed in the following sections.

Individual influences on virtual organization adoption

In research on influences on the adoption of virtual organization, professionalism that reflects professional knowledge of administrators and other organizational members has been identified as a determinant of innovation in various industries. Studies have found administrator education and employee training to be consistent influences on adoption behavior (Daft, 1978; Damanpour, 1991). Investigating the adoption of organizational innovation in the electronics and software industries, Romijn and

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Albaladejo (2002) found that internal factors related to organizational innovation include manager professional background and workforce skill. In their research on corporate structure as the structural innovation in hospitals, Arndt and Bigelow (1995) emphasized the positive potential influences of managerial professionalism.

In an information-related industry, every member of an organization is crucial to the adoption of virtual organization, which may change the daily activities in all positions.

Administrator professionalism is a key characteristic of individuals in positions of authority, and should explain the success of organizational innovation, whereas the on-the-job training of employees is expected to support the skills required to adopt such new organizational structures. Thus, the following hypotheses are suggested:

- *H1.* Administrator professionalism positively influences the adoption of virtual organization.
- H2. Employee training positively influences the adoption of virtual organization.

Organizational influences on virtual organization adoption

The literature on organizational innovation also examines organizational age and size (Arndt and Bigelow, 1995). However, research on the influences of organizational age and size on innovation adoption has yielded conflicting conclusions. Some research has discovered a positive relationship between organizational age and organizational innovation (Sørensen and Stuard, 2000; Rao and Drazin, 2002), while other studies have found that organizational age was negatively related to innovation (Kimberly and Evanisko, 1981).

Innovation behavior may differ among industries. Researchers on organizational innovation have also found it to have an inconsistent relationship with organization size. Recognizing that organizational size was positively related to technological innovation (Goes and Park, 1997), Li and Atuaheng-Gima (2001) found that size did not influence product innovation in Chinese firms.

Furthermore, electronics firms emphasize management of advanced manufacturing processes that focuses on increasing efficiency and effectiveness by coordinating all organizational departments and members (Keogh and Bower, 1997). Process management concerning departmental coordination and organizational rationalization reduces excessive product variation (Stevenson, 2002; Laosirihongthong *et al.*, 2003). Empirical evidence suggests that when organizations emphasize standardized routines and repeated manufacturing process, they tend to enhance process innovation (Benner and Tushman, 2002; Benner and Tushman, 2003). Consequently, process management may be important for electronics firms in undertaking virtual organization that may rapidly change organizational activities (Garvin, 1987). Hence, the following hypotheses are suggested:

- H3. Organization age positively influences the adoption of virtual organization.
- H4. Organization size positively influences the adoption of virtual organization.
- *H5.* The level of process management implementation positively influences the adoption of virtual organization.

Environmental influences on virtual organization adoption

Our earlier discussion refers to the direction and degree of virtual organization adoption at the environmental level. From the perspective of organizational adaptation, the importance of environmental context for virtual organization has been recognized, but has rarely been examined empirically (Arndt and Bigelow, 1995; Romijn and Albaladejo, 2002).

Competition is the first environmental variable indicating the number of major competitors in the global electronics market (Thomas *et al.*, 1999). More intense competition is generally considered to lead to technological and administrative innovation (Kimberly and Evanisko, 1981; Arndt and Bigelow, 2000).

Another crucial environmental variable is financial distress, which indicates the ratio of firm debts to assets. The greater the debt level of a firm, the more environmental pressure from external creditors may impact the decision to adopt a new structure to increase competitiveness, and, to trim and streamline the organization (Zajac and Kraatz, 1993). More financially distressed organizations may be more sensitive in acknowledging the need for virtual organization adoption (Bowman and Singh, 1993). These environmental considerations lead to the following hypotheses:

- *H6.* Level of competition positively influences the adoption of virtual organization.
- H7. Financial distress positively influences the adoption of virtual organization.

Research methodology

This exploratory investigation of the influences on virtual organization adoption in the Taiwanese electronics industry was undertaken using a survey research design. The above hypotheses regarding these factors (drawn from three major sources: individual, organizational, and environmental antecedents) were developed as the first step in the research process. Variables were operationalized and a survey sample developed. Survey data were evaluated for their adequacy and the hypotheses were tested using correlation and regression analyses.

Data and data collection

The research examined a large sample of Taiwanese electronics companies. A research population of Taiwanese electronics companies was drawn from firms listed on both TAIEX and OTC markets and included 305 firms. Questionnaires were sent to firm administrators who were asked the degree to which the company had undertaken virtual organizational structuring that was enabled by ITs. Additional questions were also asked covering the professionalism and on-the-job training of firm employees, firm reputation, and the firm's collaborative relationship with other companies in the same industry. In the survey, questionnaires were sent to the CEOs of all 305 electronics companies identified by post in August of 2003, and 61 were returned. For the 244 unanswered firms, a second mailing of questionnaires was done and 67 were returned after oral requests by telephone calls. Eliminating incomplete or inadequate responses, the study yielded a sample of 124 Taiwanese electronic firms. The final response rate of 41 percent, secured with the help of electronic firms' public relations officials, exceeds that of most survey research of this type. Secondary firm data used in this

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study were obtained from the Securities and Futures Commission, Ministry of Finance, Taiwan, ROC.

Measures

The dependent variable, virtual organization adoption, is the extent to which the firm has implemented a virtual organizational structure. This variable was measured using a six-point scale, ranging from 1, indicating "not at all", to 6, indicating "to a great extent". Unlike the binary variable used in the studies of the adoption of structural innovation in hospitals (Arndt and Bigelow, 2000) and colleges (Zajac and Kraatz, 1993), the six-point scale is suitable for the electronics industry because most information-related companies have applied IT-enabled structure to some extent in response to global competition. A binary variable thus is insufficient for measuring virtual organization adoption in this case.

The independent variables include measures of individual, organizational, and environmental effects. First, past research has found administrator education and employee training to consistently influence adoption behavior (Daft, 1978; Damanpour, 1991). These variables were operationalized by years of formal education of administrators and average hours of annual on-the-job training time for firm employees.

Second, firm age, size, and process management were considered organizational factors in this study. Firm age was measured based on the number of years of firm establishment, and firm size was measured based on the number of full time workers. Process management included three criteria: total quality management programs (TQM), ISO certifications, and Six Sigma programs (Benner and Tushman, 2002) undertaken by the firm. Each criteria of process management was also measured on a six-point scale: 1, indicated "not at all" and 6, "to a great extent". The alpha value of process management in this study was 0.85.

Finally, environmental variables included competition and financial distress. The former was measured by the number of major global competitors (Kimberly and Evanisko, 1981). The latter, indicating firm debt level, was examined using the firm's debt-to-assets ratio. A summary of the factors examined is given in the Appendix.

Results

Before undertaking detailed statistical analyses to test the hypotheses, a refined diagnostic procedure for associated data was applied to confirm the adequacy of the dependent and independent variables (Johnson and Wichern, 1992; Neter *et al.*, 1999). First, all variables were standardized due to the comparison of suitable units. Second, normal probability plots, scatter plots, and residual plots were checked to verify the assumptions of normality, non-multicollinearity, constancy and independence for regression analysis. The average variance inflation factor (average VIF) and Dubin-Watson test statistics, which were 1.40 and 1.92, also supported data checking fitness.

From the correlation matrix in Table I, virtual organization adoption was significantly correlated with administrator professionalism (r = 0.45, p < 0.01), employee on-the-job training (r = 0.54, p < 0.001), organizational age (r = 0.47, p < 0.001), and firm process management implementation (r = 0.57, p < 0.001). This finding, which suggested that over half of the independent variables correlated with

JOCM 18,2	Variable	1	2	3	4	5	6	7
,	1. Virtual organization a	doption						
	2. Professionalism	0.45**						
	3. Training	0.54***	0.55***					
	4. Organizational age	0.47***	0.27	0.19				
194	5. Organizational size	0.26	0.25	0.17	0.24			
	6. Process management	0.57***	0.37**	0.39**	0.24	0.16		
	7. Competition	-0.18	-0.39 **	-0.25	-0.18	-0.24	-0.49 **	
Table L	8. Debt	0.10	0.22	0.11	0.08	0.39**	0.04	-0.21
Correlation matrix	Notes: $n = 124$; * $p < 0$.	05, **p < 0.	01, ***p < 0	0.001				

the dependent variable, demonstrated the appropriate choice of antecedents for structural innovation. However, the lack of significant environmental variables also demonstrated the weakness of environmental influence on virtual organization adoption.

In the regression analysis results in Table II, H2, H3, and H5 are confirmed. H2 addressed the importance of on-the-job training provided to organizational members, which might improve the adoption of virtual organization. Since the IT-enabled structure presents new operating and communicating activities utilizing new and continuously changing ITs, training that increases the ability to use those new technologies is crucial. Such training may also lead to employees with the flexibility to work in a number of tasks, which is helpful in virtual organization adoption.

H3 indicated the expectation of an influence of organizational age on virtual organization adoption. As an important organizational variable, age reflects a record of continuity of an enterprise and was found to be another determinant of virtual organization adoption in the electronics industry. New entrants are less likely to innovate their structures, perhaps because they are poorly prepared to respond to the changing environment. Meanwhile, older firms generally have a record of innovation in their products, services, and organizational structures to meet market demand and maintain their businesses. Thus, the evidence here is that more mature firms in the

		Virtual organ	ization adoption
	Independent variables	b	t
	Individual variables		
	Professionalism	0.10	0.79
	Training	0.30	2.46*
	Organizational variables		
	Organizational age	0.30	2.83**
	Organizational size	0.09	0.84
	Process management	0.43	3.54***
	Environmental variables		
	Competition	0.22	1.84
Table II	Debt	0.01	0.13
Results of regression	R^2	0.58	
analyses for virtual	F	8.49***	
organization adoption	Notes: $n = 124$; * $p < 0.05$, ** $p < 0$	0.01, ***p < 0.001	

Taiwanese electronics industry are more likely than newer ones to implement virtual organization structures.

Process management, with its philosophy of continuous improvement, was addressed in H5 and found to be significantly related to adoption of virtual organization structure. Procedure-oriented process management, which was considered to enhance process innovation, was positively related to virtual organization adoption.

Finally, *H6* and *H7* relating to the environmental influences of competition and financial distress were not supported in this investigation.

Discussion

Virtual organizational structure has rapidly and widely been adopted and diffused in the Taiwanese electronics industry when implementing b-to-b e-business. This investigation of the determinants and consequences of virtual organization adoption includes three findings. First, most firms studied here apply ITs as a base for building competitiveness in response to the dynamic global environment. Utilizing IT and its potential, virtual organization also raises the possibility of diverse b-to-b electronic commerce and intra-organizational collaboration among firms in different industries. Facing fierce competition, new organizational structures must be continuously addressed and improved to adapt to environmental change.

Second, this investigation supports the argument made in previous organizational research (Arndt and Bigelow, 1995: Sørensen and Stuard, 2000: Damanpour and Gopalakrishnan, 2001; Benner and Tushman, 2003) that contextual variables influence innovation activities. This applies specifically in the adoption of virtual organization structure. The findings report significant effects of certain individual and organizational factors, but no effect of environmental variables. In addition to the importance of traditional factors such as managerial professionalism, employee on-the-job employee training and organizational age, this investigation suggests that process management implementation plays a crucial role. Since most Taiwanese and other Asian electronics companies are original equipment manufacturing (OEM) departments of large Western enterprises, process management, due to its central role in cost reduction and product control, has become a key competence in the competitive strategy of these small to medium-sized manufacturing companies. Such organizations will not be as successful in adopting virtual organization unless they implement the practice of process management that focuses on increasing efficiency and effectiveness by coordinating all activities and employees. Process management provides flexibility for organizations to innovate their structures dynamically provided that each organizational member holds the philosophy of continuously improving production techniques. This idea can be applied to most for-profit industries beyond electronics manufacturers.

Third, the findings suggest no significant effect of environmental variables, such as competition and organizational debt. By checking the coefficient of competition in the regression analysis shown in Table II, the evidence (p = 0.07) displayed an insignificant positive impact of the number of competitors of an organization weakly influencing the adoption of virtual organization. Counter-pressures from other environmental forces, as described by Zajac and Kraatz (1993), might provide a reasonable explanation with forces such as financial stress and political intervention

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likely inhibiting organizational efforts at structural innovation. DiMaggio and Powell (1983) also argued that, regardless of the demands created by environmental change, institutional environments often limit an organization's willingness to implement structural change despite the potential of such change to increase effectiveness and competitiveness. The source of this counter-pressure generally comes from environmental expectations of stability.

Another possibility is that with firms in the Taiwanese electronics industry being accustomed to facing keen competition and a changing global environment, environmental variables become indistinguishable between them. Although data from electronics firms outside Taiwan were not included in this study, we expect our findings about environmental factors would apply to the same industry in other countries as well because all electronics firms face a similar competitive situation.

This study also provides valuable information on the electronics industry in general from its examination of the industry in Taiwan. As key manufacturers that decisively influence the global market, the Taiwan-based sample may be generalized to the global electronics industry, where competitors must offer similar capabilities to global suppliers and customers. It is an industry in which a key characteristic of virtual organization – that it diminishes the impact of time and distance – is vital given patterns of operation.

As to whether the findings here on virtual organization adoption may be generalized to other manufacturing industries, most scholars consider that "[o]ne way to move toward a general understanding of innovation adoption is through intensive analysis in one particular sector of the economy" (Kimberly and Evanisko, 1981, p. 691). Although the direct applicability of our results in one industry to others is not appropriate, this study can help to identify and separate factors that may explain the nature of the phenomenon in manufacturing settings beyond the electronics industry.

While our results might provide clues for understanding the adoption of virtual organization structure in the manufacturing sector; there still remains uncertainty in generalizing to service industries. The variety of types of service firms and their outputs makes any generalization to services from this study difficult. Relatively little research has concentrated on service virtual organizations.

Conclusions

This study examines virtual organization adoption in b-to-b e-business in the Taiwanese electronics industry. Applying ITs to innovate organizational structures, virtual organization is effective when implementing b-to-b e-business. By investigating determinants of virtual organization adoption, the findings of this paper reveal significant effects on adoption efforts of individual and organizational factors, but no effect for environmental variables examined.

This study also provides important managerial insights concerning the adoption of virtual organization. First, ITs may provide the potential means to implement innovative organization structures, such as virtual organization, to respond to the pressures of change. In fact, organizations in different industries might generate and evolve various modes of such innovative structures. Applying ITs to innovate organizational structures represents an effective method for recasting ITs as corporate tools, rather than environmental pressures.

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Second, the adoption and diffusion of virtual organization might transform firms to meet the demands of e-commerce. Coping with the challenge of change and competition, organizations must sometimes undertake structural innovation when their strategic situation changes. Managers should keep themselves informed regarding the latest developments in technological, organizational and industrial changes.

This study deals with determinants of virtual organization adoption in the electronics industry. It is an exploratory study with some limitations. Stemming from a single case study of TSMC in Taiwan, our virtual organization operation section is descriptive rather than predictive. There may be some other determinants of virtual organization adoption not addressed in this investigation; furthermore, cross-industry and longitudinal investigations were not conducted.

Finally, this study suggests some possible directions for future research. First, we are still in the early stage of exploring virtual organization and more successful cases remain to be collected and analyzed to better understand these organizational structures. Research is also needed to paint a clearer picture of the potential determinants of successful adoption of virtual organizations in the changing environment.

References

- Amabile, T.M., Conti, M.R., Coon, H., Lazenby, J. and Herron, M. (1996), "Assessing the work environment for creativity", Academy of Management Journal, Vol. 39 No. 5, pp. 1154-84.
- Arndt, M. and Bigelow, B. (1995), "The adoption of corporate restructuring by hospitals", *Journal* of *Healthcare Management*, Vol. 40 No. 3, pp. 332-47.
- Arndt, M. and Bigelow, B. (2000), "Presenting structural innovation in an institutional environment: hospitals' use of impression management", *Administrative Science Quarterly*, Vol. 45, pp. 494-552.
- Arndt, M., Bigelow, B. and Dorman, H.G. (1999), "In their own words: how hospitals present corporate restructuring in their annual reports", *Journal of Healthcare Management*, Vol. 44 No. 2, pp. 117-31.
- Benner, M.J. and Tushman, M.L. (2002), "Process management and technological innovation: a longitudinal study of the photography and paint industries", *Administrative Science Quarterly*, Vol. 47, pp. 676-706.
- Benner, M.J. and Tushman, M.L. (2003), "Exploitation, exploration, and process management: the productivity dilemma revisited", *Academy of Management Review*, Vol. 28 No. 2, pp. 238-56.
- Black, J.A. and Edwards, S. (2000), "Emergence of virtual or network organizations: fad or feature?", *Journal of Organizational Change Management*, Vol. 13 No. 6, pp. 567-76.
- Boudreau, M., Loch, K.D., Robey, D. and Straud, D. (1998), "Going global: using information technology to advance the competitiveness of the virtual transnational organization", *Academy of Management Executive*, Vol. 12 No. 4, pp. 120-8.
- Bowman, E.H. and Singh, H. (1993), "Corporate restructuring of the firm", *Strategic Management Journal*, Vol. 14, pp. 5-14.
- Chang, Y. (2003), "Benefits of co-operation on innovative performance: evidence from integrated circuits and biotechnology firms in the UK and Taiwan", *R&D Management*, Vol. 33 No. 4, pp. 425-37.

JOCM	Child, J. (1972), "Organizational structure, environment and performance: the role of strategic choice", <i>Sociology</i> , Vol. 6, pp. 1-22.
10,2	Daft, R.A. and Lewin, A.Y. (1993), "Where are the theories for the new organizational form? An editorial essay", <i>Organization Science</i> , Vol. 4 No. 4, pp. i-iv.
100	Daft, R.L. (1978), "A dual-core model of organization innovation", <i>Academy of Management Journal</i> , Vol. 21, pp. 193-210.
198	Damanpour, F. (1991), "Organizational innovation: a meta-analysis of effects of determinants and moderators", <i>Academy of Management Journal</i> , Vol. 34 No. 3, pp. 555-90.
	Damanpour, F. and Gopalakrishnan, S. (2001), "The dynamics of the adoption of product and process innovations in organizations", <i>Journal of Management Studies</i> , Vol. 38, pp. 45-65.
	Davenport, T.H. and Short, J.E. (1990), "The new industrial engineering information technology and business process redesign", <i>Sloan Management Review</i> , Vol. 31 No. 4, pp. 11-17.
	Davidow, W.H. and Malone, M.S. (1992), <i>The Virtual Corporation: Structuring and Revitalizing</i> the Corporation for the 21st Century, HarperBusiness, New York, NY.
	DeSanctis, G. and Monge, P. (1999), "Introduction to the special issue: communication processes for virtual organizations", Organization Science, Vol. 10 No. 6, pp. 693-703.
	DiMaggio, P.J. and Powell, W.W. (1983), "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", <i>American Sociological Review</i> , Vol. 48, pp. 147-60.
	Estallo, J. (2000), "The new organizational structure and its virtual functioning", <i>International Advances in Economic Research</i> , Vol. 6 No. 2, pp. 241-55.
	Galbraith, J.R. (1995), Designing Organizations, Jossey-Bass, San Francisco, CA.
	Garvin, D.A. (1987), "Competing on the eight dimensions of quality", <i>Harvard Business Review</i> , Vol. 65 No. 6, pp. 101-10.
	Goes, J.B. and Park, S.H. (1997), "Interorganizational links and innovation: the case of hospital services", Academy of Management Journal, Vol. 40 No. 3, pp. 673-96.
	Harrington, S.J. and Ruppel, C.P. (1999), "Telecommuting: a test of trust, competing values, and relative advantage", <i>IEEE Transactions on Professional Communication</i> , Vol. 42 No. 4, pp. 223-39.
	Hedberg, B., Dahlgren, G., Hansson, J. and Olve, N. (1997), Virtual Organizations and Beyond, Wiley, New York, NY.
	Hsu, P.H., Shyu, J.Z., Yu, H.C., You, C.C. and Lo, T.H. (2003), "Exploring the interaction between incubators and industrial clusters: the case of the ITRI incubator in Taiwan", <i>R&D Management</i> , Vol. 33 No. 1, pp. 79-90.
	Johnson, R.A. and Wichern, D.W. (1992), <i>Applied Multivariate Statistical Analysis</i> , Prentice-Hall, Englewood Cliffs, NJ.
	Joyce, W.F., McGee, V.E. and Slocum, J.W. (1997), "Designing lateral organizations: an analysis of the benefits, costs, and enablers of non-hierarchical organizational forms", <i>Decision</i> <i>Science</i> , Vol. 28 No. 1, pp. 1-25.
	Keogh, W. and Bower, D.J. (1997), "Total quality management and innovation: a pilot study of innovative companies in the oil and gas industry", <i>Total Quality Management</i> , Vol. 8 No. 2, pp. 196-202.
	Kimberly, J.R. and Evanisko, M.J. (1981), "Organizational innovation: the influence of individual, organizational, and contextual factors on hospital adoption of technology and administrative innovations", <i>Academy of Management Journal</i> , Vol. 24 No. 3, pp. 689-713.

- Koch, C. (2000), "Building coalitions in an era of technological change: virtual manufacturing and the role of unions, employees and management", *Journal of Organizational Change Management*, Vol. 13 No. 3, pp. 275-88.
- Laosirihongthong, T., Paul, H. and Speece, M.W. (2003), "Evaluation of new manufacturing technology implementation: an empirical study in the Thai automotive industry", *Technovation*, Vol. 23, pp. 321-31.
- Lewin, A.Y. and Volberda, H.W. (1999), "Prolegomena on coevolution: a framework for research on strategy and new organizational forms", *Organization Science*, Vol. 10 No. 5, pp. 519-34.
- Li, H. and Atuaheng-Gima, K. (2001), "Product innovations strategy and the performance of new technology ventures in China", Academy of Management Journal, Vol. 44 No. 6, pp. 1123-34.
- Lucas, H.C. and Baroudi, J. (1994), "The role of information technology in organization design", Journal of Management Information Systems, Vol. 10 No. 4, pp. 9-24.
- McDonough, E., Kahn, K. and Barczak, G. (2001), "An investigation of the use of global, virtual, and collocated new product development teams", *The Journal of Product Innovation Management*, Vol. 18 No. 2, pp. 110-20.
- Macher, J.T., Mowery, D.C. and Simcoe, T.S. (2002), "e-Business and disintegration of the semiconductor industry value chain", *Industry and Innovation*, Vol. 9 No. 3, pp. 155-81.
- Neter, J., Kutner, M.H., Wasserman, W. and Nachtsheim, C.J. (1999), Applied Linear Regression Models, McGraw-Hill, New York, NY.
- Powell, A., Piccoli, G. and Ives, B. (2004), "Virtual teams: a review of current literature and directions for future research", *Database for Advances in Information Systems*, Vol. 35 No. 1, pp. 6-36.
- Rao, H. and Drazin, R. (2002), "Overcoming resource constraints on product innovation by recruiting talent from rivals: a study of the mutual fund industry, 1986-94", Academy of Management Journal, Vol. 45 No. 3, pp. 491-507.
- Romijn, H. and Albaladejo, M. (2002), "Determinants of innovation capability in small economics and software firms in southeast England", *Research Policy*, Vol. 31, pp. 1053-67.
- Sanchez, R. and Mahoney, J.T. (1996), "Modularity, flexibility, and knowledge management in product and organization design", *Strategic Management Journal*, Vol. 17, pp. 63-76.
- Shao, Y.P., Liao, S.Y. and Wang, H.Q. (1998), "A model of virtual organizations", Journal of Information Science, Vol. 24 No. 5, pp. 305-12.
- Sørensen, J.B. and Stuard, T.E. (2000), "Aging, obsolescence, and organizational innovation", Administrative Science Quarterly, Vol. 45, pp. 81-112.
- Stevenson, W.J. (2002), Operations Management, McGraw-Hill, New York, NY.
- Suchan, J. and Hayzak, G. (2001), "The communication characteristics of virtual teams: a case study", *IEEE Transactions on Professional Communication*, Vol. 44 No. 3, pp. 174-86.
- Thomas, H., Pollock, T. and Gorman, P. (1999), "Global strategic analyses: frameworks and approaches", *Academy of Management Executive*, Vol. 13 No. 1, pp. 70-82.
- Tushman, N.L. and Nadler, D.A. (1986), "Organizing for innovation", *California Management Review*, Vol. 28, pp. 74-92.
- Van Ryssen, S. and Godar, S. (2000), "Going international without going international: multinational virtual teams", *Journal of International Management*, Vol. 6, pp. 49-60.

JOCM 18,2	Zajac, E.J. and Kraatz, M.S. (1993), "A diametric forces model of strategic change: assessing the antecedents and consequences of restructuring in the higher education industry", <i>Strategic Management Journal</i> , Vol. 14, pp. 83-102.
200	 Appendix. Study measures Dependent variable: virtual organization adoption: Relative to your principal competitors, please indicate the extent to which your firm undertakes virtual organizational structure.
	Independent variables:
	• Professionalism: How many formal educational years does your firm's CEO have?
	• <i>Training</i> : How many average hours of annual on-the-job training time for your firm's employees were given last year?
	• Organizational age: How many years were there since your firm established?

- Organizational size: How many full-time workers are employed in your company?
- *Process management*: Rate your firm relative to its major competitors over the last three years on the extent to which it has:
 - implemented total quality management (TQM);
 - owned the number of ISO quality program certifications; and
 - advanced six sigma programs.
- Competition: How many major global competitors does your firm face?
- Debt: Please indicate the ratio of firm debts to firm assets.

Book review

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Charging Back up the Hill: Workplace Recovery after Mergers, Acquisitions, and Downsizings

Mitchell Lee Marks Jossey-Bass Publishing 2003 ISBN 0-7879-6442-5 US \$27.95 **Review DOI** 10.1108/09534810510589606

In an economy that places a premium on speed, classic corporate thinking often dictates that the quickest way to add products, channels or customers is to acquire rather than to build internally. Not surprisingly, worldwide Mergers, Acquisitions and Downsizings ("MADness") are at an all time high. In the past five years, it is estimated that at least 9,500 deals were announced in the United States. Deal volume during the historic merger and acquisition wave of the years 1995 through 2000 totaled more than \$12 trillion (Colvin and Selden, 2003, p. 5). However, only 20 to 25 percent of mergers and acquisitions turn out to be winners. Another 30 to 40 percent clearly fail, and the rest fall somewhere in between (Krattenmaker, 1999, p. 3). The majority of business combinations never produce the anticipated value, with increasing numbers ending in the business equivalent of divorce, break-up or spin-off. In fact, most organizations that downsize fail to realize long-term cost savings or efficiencies beyond the cuts, necessitating multiple waves of layoffs and restructuring (Marks, 2003, p. 11).

The world's biggest, most successful companies, advised by highly educated Wall Street investment bankers, are leaders of today's failed mergers, acquisitions and downsizings. A recent example is the acquisition of Sterling Drugs by Eastman Kodak. This deal was done because some analysts at Kodak headquarters figured, "We use chemicals in processing film, and they use chemicals in making drugs-hey, that's synergy!" (Marks, 2003, p. 57). There proved to be no synergy between the firms, and Kodak eventually divested its interest in Sterling, resulting in a financial loss. In light of such dismal performance by the "experts", can the success rate be improved? Is this process? Faulty strategy and economic forces are regularly blamed for the dismal performance, but if you trace the causes back to their roots, people issues often figure prominently in the failure of reorganization (Donahue, 2001, p. 3). The need for senior managers to challenge their own ways of thinking about these transactions is at the center of Mitchell Marks' book.

By challenging the common beliefs of executives in the business community, Marks builds a strong case for the need to pay attention to more than financial statements while the MADness is occurring. "Organizations are nothing but people, so to achieve organizational objectives, executives need to acknowledge human realities" (Marks, 2003, p. 57). When it comes to putting two companies, divisions or business units together, is it as easy as snapping Lego[®] pieces together? MADness is not child's play,

Journal of Organizational Change Management Vol. 18 No. 2, 2005 pp. 201-203 © Emerald Group Publishing Limited 0952-4814 and should take a much broader approach, allowing for, what Marks calls, "workplace recovery" to take place.

Workplace recovery is about "helping employees let go of the unintentional pain and consequences they experience during and after transitions while simultaneously helping organizations use transitions as opportunities to build new and better workplaces" (Marks, 2003, p. 56). For employees to move toward this recovery, they need two levels of intervention: organizational transition and individual adaptation (Marks, 2003, p. 57).

For years corporations have moved through organization MADness with more thought given to the financial result of the changes than the effect it will have on their workforce. The people-based statistics, i.e. retention rates, forced and voluntary severance packages and job eliminations, are often camouflaged on the corporate balance sheet as "one-time write-offs". Should organizations be concerned about the need to help those in the organization transition through MADness? As the author states, "Organizations need people's hearts and minds, not just their bones and muscles, to pull away from the pack and capitalize on emerging business opportunities" (Marks, 2003, p. 24). Dealing with the processual effects of MADness - or "transition" - is far more critical than change management. According to William Bridges, "Transition is the way that we all come to terms with change" (Bridges, 2001, p. 2). Without transition, change is mechanical, superficial, empty, and does not allow individuals to behave in an authentic manner (Bridges, 2001, p. 3). Like Bridges, Marks differentiates change from transition: "Change is a path to a known state: something discrete, with orderly, incremental and continuous steps" (Marks, 2003, p. 13). On the other hand, transition "is a path to an unknown state, something discontinuous that involves simultaneous and interactive changes and the selection of 'breakthrough' ways of thinking, organizing and doing business" (Marks, 2003, p. 13).

Workplace recovery is about "helping employees let go of the unintentional pain and consequences they experience during and after transitions while simultaneously helping organizations use transitions as opportunities to build new and better workplaces" (Marks, 2003, p. 57).

Surprisingly, however, Marks does not address power dynamics. An organization is composed of executives (tops), who have an overall responsibility for the system; a group of managers (middles); and several worker groups (bottoms), whose members work on various project assigned by tops, middles and customers (Oshry, 1995, p. 16). The dynamic interplay of these relationships creates a power struggle during normal times, which is amplified during times of MADness. What impact do these power dynamic have on MADness? Each of these groups has different needs. Tops live in a world of complexity, bottoms live in a world of invisibility, middles live in a world of tearing, and customers live in a world of neglect (Oshry, 1995, p. 17). During times of MADness, these dynamics become more visible and create stress at each level. I recall, during a time of post-merger, meeting with executives and being instructed to create a list of all disgruntled employees and submit it to the Human Resource department so it could begin recruiting to replace the discontented employees. Because the sourcing and recruitment processes take time, the middles were instructed to keep the situation under control for the short term. The tops had no appetite to deal with the complexity of either the "change" or the "transition".

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As I write, doctors at the Children's Hospital at Montefiore Medical Center in New York are working to separate conjoined twins Carl and Clarence Aguirre (The New York Times). The procedure being used is part of a rare, gradual approach to separating joined twins using a series of operations rather than one multiple-day procedure. Currently the doctors are in the fourth and final procedure in a series that has taken place over the last 11 months. Given the slight odds that both babies will survive this procedure, doctors have taken this new approach realizing, if successful, it will bring a major breakthrough in medical science. These babies are being separated so that they can live separately; their survival is at stake. The doctors are aware of the trauma of such a change and have intentionally decided to take a more gradual approach to improve the odds of their success. This story illustrates important lessons for corporate America about its current approach to MADness. Successful mergers, acquisitions and downsizings take time. When two entities come together, the union cannot be blended using a microwave, but rather the slow boil of a crock-pot is needed. The additional time is needed to allow for true workplace recovery and to reduce the odds of losing good employees.

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References

Bridges, W. (2001), The Way of Transition, Perseus, Cambridge, MA.

Colvin, G. and Selden, L. (2003), "M&A needn't be a loser's game", Harvard Business Review.

- Donahue, K.B. (2001), "How to ruin a merger: five people-management pitfalls to avoid", *Harvard Management Update*.
- Krattenmaker, T. (1999), "Performing cultural due diligence", Harvard Management Communication Letter.
- Marks, M.L. (2003), Charging Back up the Hill: Workplace Recovery after Mergers, Acquisitions, and Downsizings, Jossey-Bass, San Francisco, CA.
- Oshry, B. (1995), *Seeing Systems, Unlocking the Mysteries of Organizational Life*, Berrett-Koehler, San Francisco, CA.

Book review

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Emerald

Call for papers

A special issue on Autoethnographic accounts of organizational change

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Autoethnography is a genre of qualitative sociological research that is emerging into the research domain of business and industrial sociology. This special issue attempts to encourage autoethnographic work in organizational studies; in particular, to explore organizational change situations from personal, situated perspectives.

Autoethnography incorporates autobiographical elements into research, connecting the personal to the cultural through introspection and analysis of multiple layers of discovery and awareness of lived experience.

Included in the genre of autoethnography are:

- personal experience narratives (Denzin, 1989);
- personal ethnography (Crawford, 1996);
- self-ethnography (van Maanen, 1995);
- reflexive ethnography (Ellis and Bochner, 1996); and
- autobiographical ethnography (Reed-Danahay, 1997).

First person accounts are common in autoethnography. Often a multiple and fragmented view of self, and of the situation, is illuminated through stories and accounts of actions and emotions – with attention to embodiment, emotion, dialogue and use of language in meaning-making in interaction. Increasingly common use of the first person in published management and organizational studies research indicates increased acceptance of the self-narrative as a form of research that contributes to our understanding of organizational life.

Autoethnographic accounts offer a unique perspective; focused on the inner self within the cultural and social aspects of experience, these accounts can provide a situated view of organizational change that other methods cannot capture.

Submissions on the topic of autoethnographic accounts of the organizational change are encouraged for this special issue. Manuscripts assessing the use of authoethnographic methods for studying organizational change are also welcomed. Suggested topics include:

 Individual accounts or co-constructions of experiencing moves toward organizational flexibility; structuring for innovation, project-team structures, self-managing teams, downsizing, or other organizational changes aligned with topical issues in organizational life.

- The relationship between corporeality, emotionality, and organizational change.
- Dualistic narratives of change from both change agent and organizational member perspective(s).
- Accounts of change agent lived-experience of organizational change; especially those highlighting gender, ethnicity, class and cultural differences, and so on.
- Accounts of organizational change from organizational members (not change agents nor change managers); again, including accounts highlighting lived experience of organizational members that illuminate gender, ethnicity, regionality, and so on.
- When organizational change fails narratives of change efforts gone awry.
- "Corporate perspective" accounts of organizational change.
- Critical accounts of organizational change (autoethnographic perspective).
- Personal accounts of resistance to change.

This list is not exhaustive and other topics are also welcome. Conceptual, theoretical and empirical articles are equally welcome. It is anticipated that the special issue will be published in late 2007.

Due date: Submissions should be received by November 1, 2006.

Special issue editor

The editor for this special issue "Autoethnographic accounts of organizational change" for *JOCM* is Cynthia Bean, PhD at the University of South Florida St Petersburg, College of Business. Submissions should be sent by e-mail or hard copy-and-diskette to: Cynthia J. Bean, PhD, College of Business, University of South Florida St Petersburg, 140 Seventh Avenue South, St Petersburg, FL 33701. E-mail: cjbean@stpt.usf.edu; Tel: +1 - 727 553-4997.

Questions about this special issue, including expectations, requirements, appropriateness of topic and the like can be directed to Dr Bean at the above contact points.

Submission guidelines: Information for contributors to JOCM can be obtained from http://dandini.emeraldinsight.com/ vl=1300285/cl=45/nw=1/rpsv/jocm.htm

Submissions must adhere to the requirements of the style guide for authors of *JOCM*. All submissions will be subject to double blind review per the journal review policy.