

# MAPPING PROCESSES TOWARD STRATEGIC LEVERAGE

**Francisco Chia Cua**, School of Applied Management, Otago Polytechnic, New Zealand  
francisc@tekotago.ac.nz

**Paul Theivananthpillai**, Department of Accountancy and Business Law, School of  
Business, University of Otago, New Zealand  
priyan@business.otago.ac.nz

## Abstract

*Although corporate strategy helps in differentiation, positioning, and aligning the organisation to align itself internally to be competitive, it is not enough. A separate enterprise information system (EIS) strategy must be put in place do deal with external realities. This is particularly crucial to a software start-up in its prototype development stage. Development time must be as short as possible. Two-way communications is possible through EIS. This paper examines a start-up, scans its business environments and explores opportunities, threats, and appropriate corporate strategy. Enterprise resource planning (ERP) and its evolution provides insights to understanding the concept of EIS strategy that follows.*

*Keywords: Internal and external alignments, Change management, Enterprise information systems, Supply chain management*

## 1 INTRODUCTION

Success is a paradox. Actions required for success in the short run often create the conditions for failure in the long run. Truman and O'Reilly III (2002) have observed. The reason is the proper alignment of structures, systems, peoples, culture, and processes. However, it is the same reason that often causes rigidity, inertia, and complacency for the organisation to learn, innovate, and change. They make it difficult for organisations to adjust continuously to the ever-changing business environment. By not able to adapt to the changing external environments, current success is future failure. Take for example the just-in-time (JIT) many New Zealand manufacturers are moving toward to (Basnet *et al.*, 2003). Reliable delivery date is always crucial. Many have implemented enterprise resource planning (ERP) and/or supply chain management (SCM) software to ensure delivery date and establish feedback mechanism among the partners of order-to-delivery cycle. Encountering frustrations and difficulties from implementation and maintenance, they ask themselves: is the ERP or SCM the silver bullet or is it a road block? Authorities argue that organisations fine-tuned to succeed in the short run generally are not ready to cope with change.

## 2 THE CORPORATE STRATEGY

Strategy is basically a set of relationships to profitability (Argyres & McGahan, 2002). Profitability, which is revenue minus cost, consists of industry-part and positioning-part profitability. Positioning is not enough. Speed is vital (Stalk *et al.*, 1992). Saturate the market within a three year period. Optimise the business processes. Leverage process improvement and knowledge. The complete strategy integrates positioning, capabilities/business processes, and innovation and change (Gilbert & Strebels, 1989; Harmel & Prahalad, 1990; Johnson & Scholes, 2002; Tushman & O'Reilly III, 2002).

Pfeffer and Salancik (1978 in Bendoly *et al.*, March-April 2004) argue that the greater and more unique the value added to the network of stakeholders from suppliers to distributors to consumers, the stronger is its network position and the more the stakeholders are likely to rely on that organisation. This resource dependency [theory]

leads to more implementations and ERP vendors continue to offer more “add-on” modules to the core modules such as SCM (supply chain management), CRM (customer relationship management), and APS (advance planning and scheduling).

## 2.1 Motivation and importance

Corporate strategy ensures that the organisation aligns resources itself internally to be competitive (Michael E. Porter, 1996). When an organisation aligns key resources into a pattern that competitors find difficulty in imitating, the result is a sustainable competitive advantage (Prahalad & Hamel, 1990). This sustainable competency has to be viewed by customers as a position in the market that is different from the competition (Porter, 1980; 1985). As information technology and systems have increased in power, the ability to align these IS/IT resources to leverage business strategy has traditionally been regarded as a form of alignment that enable the organisation’s strategy to achieve the desired posture or position in the market (Tan, 1994; Venkatraman, 1991). As organisations outsource, insource, offshore, and multisource various aspects along the value chain, newer forms of organisational structures are emerging (Cua & Theivananthampillai, 2006c). However, the emergence of new organisational structures and distributed processes are not enough to ensure success. To enable these new structures and processes to achieve the strategy or strategic vision of the organisation requires an appreciation of the innovation and the diffusion of innovation (Cua & Theivananthampillai, 2006a, 2006c). To enable linkages between the supply chain, the host organisation and the customer value chain would require the enabling technologies (IS/IT). This paper draws upon the literature that explores: the use of emerging technologies that require a process centric approach (Madhavan & Theivananthampillai, 2005). Then, the change management literature is used to identify key issues in shifting from a functional form (Nadler & Tushman, 2004). Finally this paper draws upon a case study, a newly formed organisation that links the supply and customer chains, as a portal for enterprise systems. In this way, this paper explores the key issues that are impediments, as well as opportunities, for the case organisation in this rapidly changing environment. To understand the relevance of some of the theories when applied to the case study, an exploration of the key dimensions of enterprise information systems is warranted.

## 3 ENTERPRISE INFORMATION SYSTEMS (EIS)

Enterprise information systems (EIS) extend entire value chains to include suppliers and customers. Hashmi (2001) calls this extraprise information factory. Bendoly et al (March-April 2004) call it value chain resource planning. They further, “Competition is no longer limited to the realm of the enterprise. Entire value chains are now starting to act as formidable entities, competing against each other for similar markets. The structures of these partnered communities are both increasingly idiosyncratic and hard to duplicate, which strengthens the sustainability of the competitive advantages of their constituents. But their effectiveness is only as good as the capabilities supported by interfirm ITs. ERP is at the core of these extended systems, though in reality their architectures reach far beyond that.” Whatever terms other people refer to EIS, whether it is ERP, SCM, logistics information systems, the development of mutually beneficial collective strategies between co-operating partners within the extended value chain (Christopher, 1992, p. 214) improve responsiveness and put the customer at the centre of the business. The challenge is a broad change that will impact across the entire chain from the supplier to the company to its customers.

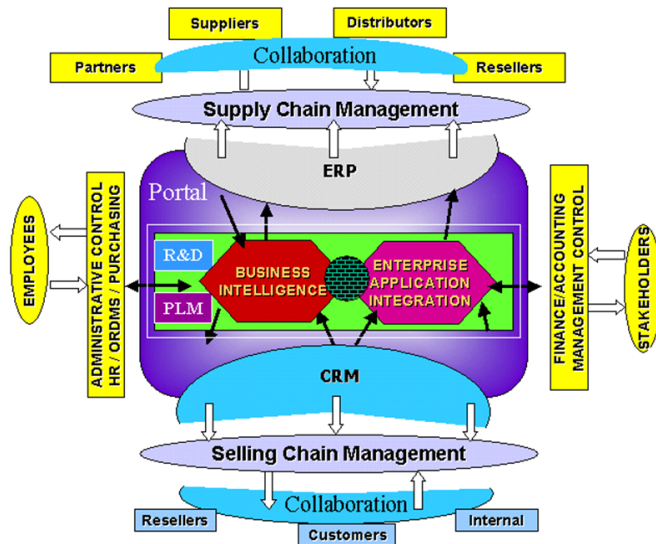
It is apparent that the scope of EIS is to link the business and the marketplace with concepts such as logistics, supply chain, and supply chain management. Logistics refers to the flow of information and materials. Supply chain<sup>1</sup> is the network of organisations that are involved through upstream and downstream linkages. And the management of supply chain is the management of upstream and downstream relationships with suppliers and customers to deliver superior value to the customers at less cost to the supply chain as a whole. From a total systems viewpoint, the process is to satisfy the customers’ needs through the coordination of the offerings and information flows that extend from the marketplace through the business and its operations and beyond that to

---

<sup>1</sup>Aitken (1998) defines supply chain as “a network of connected and interdependent organisations mutually and co-operatively working together to control, manage and improve the flow of materials and information from suppliers to end users.”

suppliers. (Christopher, 1992, pp 13-18). In effect, EIS caters to the network of connected and interdependent organisations working together to improve the flow of materials and information from suppliers to customers.

To understand the role of such an inter-enterprise system would require a process view where the processes link organisations together, rather than the functional structures that dominant the more traditional organisation forms. By addressing processes and cutting across functions can this new form of enterprise systems enable the strategies of each organisation to be enabled and achieved (Madhavan & Theivananthampillai, 2005). However, a process centric perspective faces some major barriers.



Source: Hashmi, N. (2001). Extraprise Information Factory: An Architecture for Next Generation of eBusiness Applications. Retrieved 26 July 2005, from [http://searchsap.techtarget.com/searchSAP/downloads/Enterprise\\_Information\\_Factory.ppt](http://searchsap.techtarget.com/searchSAP/downloads/Enterprise_Information_Factory.ppt)

Figure 1. Inter-enterprise information systems

#### 4 BARRIER OF FUNCTIONAL ORGANISATION

A major barrier to successful implementation of a strategic EIS is the traditional functional form of organisational structure (Burgess, 2001, p22; Christopher, 1992, p 216). Proper alignment of structures, systems, peoples, culture, and processes makes a company efficient and successful (Truman and O'Reilly III, 2002). The formal structure can make a functional structure rigid. Its hierarchy, functional roles and responsibilities, performance measurements and reward systems makes the concept of process hard to understand and reconcile. Take for example the logistics process. In a company with functional structure, logistics refer to at least three functions: physical procurement, materials management, and physical distribution. A senior manager who considers his functional area his territory and who guards this territory from intrusion of other functional managers normally heads each. In a logistics process, the process owner is responsible to provide the process team with the process knowledge. He does not own the process performance but the "logistics" design. His process team members are experts in a particular aspect of the process while he is the expert in the whole process. In effect, the process owner is responsible in process design, coaching, and advocacy (Hammer, 1996, p 76). If in a traditional organisation, the functions are vertical in nature, then in a process-centred organisation, the processes are horizontal. Introducing horizontal processes to vertical functions poses an immediate problem. Given this perspective of the functional manager, getting senior management commitment is another issue that needs exploration.

#### 5 SENIOR MANAGEMENT COMMITMENT

How does a company prepare for supply chain management? It is said that a major barrier is the organisation with vertical functions implementing change brought about by horizontal processes. On the basis of best

practices of SCM implementation, Burgess (2001) suggests six solutions. One strategy is senior management commitment. Said commitment is important in getting the resources required and overcoming cultural, organisational, and supplier barriers. Nadler and Tushman (2004, p 555) enumerates three problems and implications for change management. One problem is significant power problems. The political dynamics associated with the change preferably must be managed prior to implementation. Second is about anxiety and its associated dysfunctional behaviour. The implication is a need to motivate constructive behaviour, through communications and rewards, in response to the change. Third relates to control requiring systematically transitional management. There are techniques to deal with each problem. All directly or indirectly pertains to getting senior management commitments. And depending on the change, the challenge is to widen senior management by appointing a group of junior managers and makes this group feel like senior management (Nadler and Tushman, 2004, p 572). Thus, organisational change inevitably requires senior management commitment.

## 6 UNDERSTANDING THE CHALLENGE: THE CASE STUDY

This paper draws upon a case study as a source of issues that have driven this paper, as qualitative research can drive academic research to revisit the motivation and importance of emerging themes (Cua & Theivananthampillai, 2006b). In this manner, the premises and thrusts of academic research are motivated by the interaction with practice and gain the credence of understanding the fine-grained impact of technology on real world organisations.

The organisation in focus is a start-up in its prototype development stage. Its product is a web-based general ledger system intended primarily for tax compliance of small and medium-sized enterprises (SMEs) in a developing country in South-east Asia.

Development time must be as short as possible. Thus, Billy (name disguised) breaks down the development into three stages (concept, prototype, and implementation) and two time frames (concept and response). Since each stage has a minimum time to completion, overlapping the concept and prototype stages shortens the concept time and delays freezing the concept as late as possible. Delaying the time to freeze the concept effectively shortens the response time (implementation stage). With this flexible development approach, a two-way communications must be in place with the accountants in the foreign market, especially during the prototype development.

## 7 EVER CHANGING BUSINESS ENVIRONMENT

To a greater or lesser extent, external environments have impacts almost on *all* companies (Johnson and Scholes 1999, pp 97-105). To this extent, organisations have to be kept abreast of issues emerging from the natural environment, legislation, macroeconomic pressures on a global scale, as well as cognizant of cultural values across the value chain, coupled with the need to include this overwhelming information into a coherent set to facilitate decision making. Some major software companies like Oracle and Sage are heavily investing in products that address this new information set in bundled packages that address the needs of business compliance and business intelligence.

### 7.1 Business compliance and business intelligence

The combined pressures of compliance to business regulations and gaining of business advantage from good information available at the right time to a greater number of users is pushing business value into first (Banks, May/June 2005). Exploiting database and getting data fast enough to the data warehouse for online analytical processing (OLAP) across intra and inter-enterprise (Figure 2) are opportunities. The right information at the right time for decision-making is especially essential to Billy's business customers and accountants. However, changing data poses a threat. It creates serious risk of invalidating compliance. Thus Billy must devise a solution to trapping and logging changes especially through an administrative password.

While the understanding of processes have central to allow the EIS to enable strategies, there is a need for the customisation and adaptation of software processes to be configured appropriately. Adaptation and configuration of software processes is essential for EIS to be effective (Brehm *et al.*, 2001; Davenport, 2000; Davenport &

Prusak, 1998). Below diagram deals with some of the key issues to allow the software processes to meet the customer needs. It moves the adaptation and configuration of software processes to the extra enterprise level. This adaptation and configuration of software processes must be understood in term of the processes of the customer.

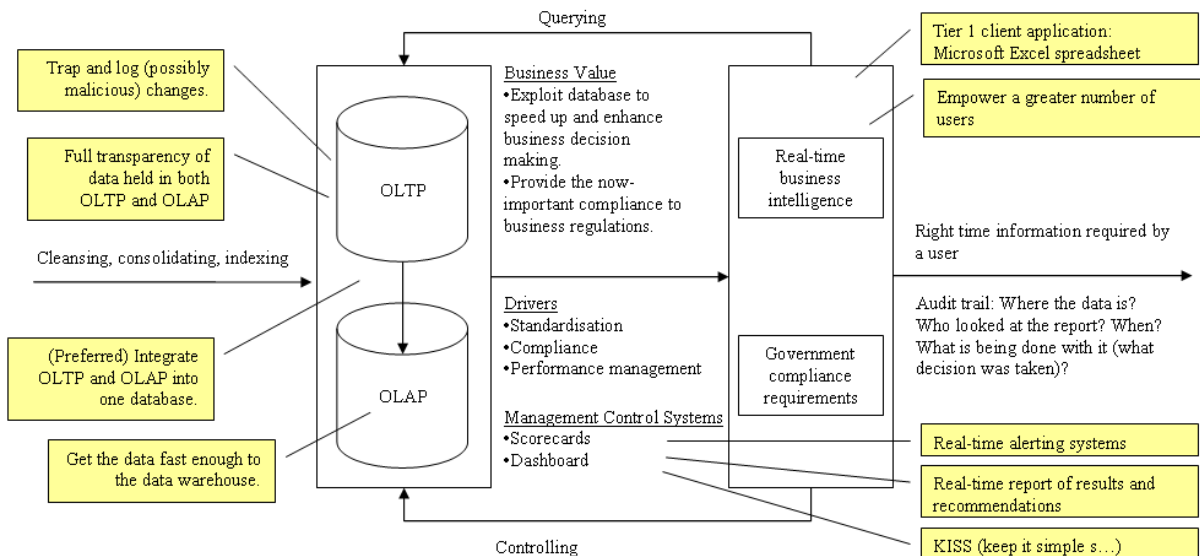


Figure 2. Business intelligence for the links in the enterprise information systems

## 7.2 Customer service and responsiveness

Customers are less receptive to technical difference between competing offerings. Also they are more demanding. Customer service, a differentiation tool, involves time and place utility. Its responsiveness ranges from on-time delivery to after-sales support (Christopher, 1992, p 24). It involves four of the six major processes of Billy's operation, namely: customer communications, implementation-to-testing-to-maintenance, customer testing-to-training-to-support, and order fulfilment and renewal. While the customer perspective is important, there are the additional issues of global competition and sourcing requirements which layer the diffusion of ES innovation (Cua & Theivananthampillai, 2006c).

## 7.3 Global competition and sourcing

This offering will require outsourcing of training and support as well as regular update of local requirements. Even if hosting of the application and data will be in New Zealand, other countries like United States are options as backup. Lastly, to cater to local demands, the challenge will be to provide configuration and variety amidst standardisation. Thus, competitive advantage is achieved by identifying world markets for its products and developing a procurement-distribution logistics strategy to support its [corporate and] marketing strategy (Christopher, 1992, p 26). Referring to above six major processes, the idea-to-prototype, implementation-to-testing-to-maintenance, order fulfilment and renewal are processes to optimise.

The ERP systems, even with their extension, do not fit perfectly certain segments especially the retail segments. Their demand and supply chain issues are unique. For example, the retail segments must squeeze costs out of their operations, improve customer experience, and ensure the delivery of the right product to the right place at the right price at the right time to satisfy customers when they decide to buy the product. So enter the supply chain management software and their vendors, such as Manugistics Group Inc.

ERP and SCM are of different breeds (Table 1). Although the extensions of ERP make them to behave like SCM and the functionalities of SCM are similar to those of ERP, there are distinct differences despite of their convergence. ERP systems generally operate across one enterprise with depth and complexity. SCM systems fit

better for inter-organisations where information sharing remains to be “balanced” and “managed”.

<u>Point of Comparison</u>	<u>ERP</u>	<u>SCM</u>
Scope	Intra-organisation	Inter-organisation
Functional areas	Relatively more	Relatively less
Complexity	Relatively more	Relatively less
Data	More static	More dynamic
Handling of constraint in demand, capacity, and material	In isolation of each other	Simultaneous
Processing speed	Relative slower	Faster
Functionality	More concerned with transaction processing, higher volume of transactions processed, relatively less dynamic	More concerned with simulation and/or adjustment processing with regard to dynamic constraints in real-time

Source: Enterprise Resources Planning Systems and Supply Chain Management, 2001

Table 1. ERP versus SCM

## 8 INSIGHTS FROM THE PAST

One insight is about seamless integration. Every organisation exists for a purpose. Peter Drucker (1954, p 37) says, "And its purpose must lie outside the business itself. In fact, it must lie in society since a business enterprise is an organ of society." For business to be successful now and in the future, it has to align itself internally and also externally with the society. Especially now when all businesses sustain combined pressures of regulation compliance and of right decision-making with the use of good information at the right time. These pressures are drivers toward seamless integration or alignment internally and externally. The ERP, by its evolution, is the foundation of inter-enterprise information systems such as CRM (that is, customer relationship management).

Due to the initiative of seamless integration (Figure 2), scoreboards and dashboard become vital components of day-to-day business processes and performance compliance management. There will be integration of online transaction processing (OLTP) and online analytical processing (OLAP) to make the data fast enough to the data warehouse. Since data changes could create serious risk of invalidating compliance, trapping changes is mandatory but more difficult with external users factored in into the enterprise information systems. Microsoft Excel will be more crucial as a tier 1 client application.

Four business success principles are relevant (Hammer, 1996, pp 97-105). The mission of a business is to answer a customer's need or solve a customer's problem (Principle 1). The company's whole processes, all the tasks put together, are necessary to achieve that mission (Principle 2). Business success comes from superior process performance (Principle 3) achieved through superior process design, quality people to perform it, and right environment for them to work in (Principle 4). The enterprise information systems foster that environment. ERP provides the foundation with inter-enterprise information system as collaborative instruments (Figure 1).

## 9 CONCLUSION

It has been suggested that Billy explore corporate strategies to carry out his venture. However those plans are not enough without a separate EIS to be positioned and aligned to meet customer needs. The product life cycle is general shorter in recent times. Saturating the market in as short a time possible (say, within a three year period) is recommended. Billy has started from a clean sheet of paper with a process centred orientation. This is his advantage. Purchase decision on software has a time gap. Customers have to learn and try it out first prior to making the purchase decision. Training through the network shortens this time frame. Shortening the response time in prototype development and implementation makes the offering more responsive. These are only possible with two-way communications through EIS. Thus, a separate EIS strategy is crucial to success.

Managers have more pressures from the government for compliance. They need to be able to effectively monitor

organisational performance. Real-time management control systems in the form of scorecards and dashboard provide results, recommendations, and alerting mechanism.

If Billy was to set up the downstream integration with his prospective customers, he needs to be able to get commitment from the senior accountants or management in setting up the integration. People don't like change. Unavoidably there are barriers, especially organisation barrier, to take into consideration. The lessons learned from this case study will now be reviewed in conclusion.

The forces from macro, industry, and task environments provide opportunities, as well as threats, to how firms link themselves into networks and create dominant competitive advantage. The Internet is transforming supply chain toward shortened cycle times, strategic purchase sourcing, reduced inventory, lowered logistics costs and streamlined communications network (Poirier & Bauer, 2000). Unless firms learn to harness all the available technology to coordinate with other members of their supply chain, they will fail totally in the new digital environment. Bendoly et al (March-April 2004) state, "Competition is no longer limited to the realm of the enterprise. Entire value chains are now starting to act as formidable entities, competing against each other for similar markets." Likewise, Poirier (1999) affirms that the ability to improve and perfect its supply chain, not corporate strategy, technology, or people, is the key to a firm's long-term growth and success.

The start-up is and will be interacting with hosting providers, champion leaders and customers in the foreign market, the bank providing the credit card authorisation and acceptance, chambers of commerce, competitors, and government agencies. This task environment, unique to the start-up, is where the EIS will operate (Fahey and Narayana, 1986). Information and materials flow through the upstream and downstream linkages. The linkages ensure optimisation and coordination. It provides seamless integration across the entire organisation in real-time (Spiekermann, 2004).

## References

- Aitken, J. (1998). *Supply Chain Integration within the Context of a Supplier Association*. Cranfield University.
- Argyres, N., & McGahan, A. M. (2002). An interview with Michael Porter. *Academy of Management Executives*, 16(2), 43-52.
- Banks, M. (May/June 2005). Business, not technology. *Application Development Advisor*, 9(3), 16-19.
- Basnet, C., Corner, J., Wisner, J., & Tan, K.-C. (2003). Benchmarking supply chain management practice in New Zealand. *Supply Chain Management: An International Journal*, 8(1), 57-64.
- Bendoly, E., Soni, A. K., & Venkataraman, M. A. (March-April 2004). Value chain resource planning: Adding value with systems beyond the enterprise. *Business Horizons*, 47(2), 79-86.
- Brehm, A., Heinz, L., & Markus, M. L. (2001). *Tailoring ERP systems: A spectrum of choices and their implications*. Paper presented at the 34th Annual Hawaii International Conference on System Sciences, Hawaii, USA.
- Burgess, R. (2001). *Surviving Supply Chain Management*. Oxford: Chandos Publishing (Oxford) Limited.
- Christopher, M. (1992). *Logistics and Supply Chain Management: Strategies for Reducing Costs and Improving Services*. London: Pitman Publishing.
- Cua, F. C., & Theivananthampillai, P. (2006a, 10-11 Apr 2006). *Diffusion of Innovations in Deployment of Information Technology*. Paper presented at the UK Academy of Information Systems (UKAIS) 2006: Where Theory Meets Practice, The Park, University of Gloucestershire, England.
- Cua, F. C., & Theivananthampillai, P. (2006b, 10-11 Apr 2006). *Understanding quality in qualitative research in IS: A practitioners road map*. Paper presented at the UK Academy of Information Systems (UKAIS) 2006: Where Theory Meets Practice, The Park, University of Gloucestershire, England.
- Cua, F. C., & Theivananthampillai, P. (2006c, 29 Jun - 2 Jul 2006). *Value Management of Sourcing Decisions: The Cost of Ownership in Performance Management Systems*. Paper presented at

- the Pacific Asian Consortium for International Business Education & Research (PACIBER) 2006, Cebu, Philippines.
- Davenport, T. H. (2000). *Mission Critical: Realizing the Promise of Enterprise Systems*. Boston, Massachusetts: Harvard Business School Press.
- Davenport, T. H., & Prusak, L. (1998). *Working Knowledge: How Organizations Manage What They Know*. Boston, Massachusetts: Harvard Business School Press.
- Drucker, P. F. (1954). *The Practice of Management*. New York: Harper & Row.
- Enterprise Resources Planning Systems and Supply Chain Management*. (2001). Retrieved 28 July 2005, from [http://projects.bus.lsu.edu/independent\\_study/vdHING1/erp/#vs](http://projects.bus.lsu.edu/independent_study/vdHING1/erp/#vs).
- Fahey, L., & Narayanan, V. K. (1986). *Macroenvironment Analysis For Strategic Management*. St. Paul, MN: West Publishing Co.
- Gilbert, X., & Strelbel, P. (1989, Summer). From innovation to outpacing. *Business Quarterly*, 54(1), 19-22.
- Hammer, M. (1996). *Beyond Reengineering: How the Process-Centered Organization Is Changing Our Work and Our Lives*. New York: HarperCollins Publishers, Inc.
- Hamel, L., & Prahalad, C. K. (1990). The core competence of the corporation. *Harvard Business Review*, Spring, 79-91.
- Hashmi, N. (2001). *Extraprise Information Factory: An Architecture for Next Generation of eBusiness Applications*. Retrieved 26 July 2005, from [http://searchsap.techtarget.com/searchSAP/downloads/Enterprise\\_Information\\_Factory.ppt](http://searchsap.techtarget.com/searchSAP/downloads/Enterprise_Information_Factory.ppt)
- Johnson, G., & Scholes, K. (2002). *Exploring Corporate Strategy: Text and Cases* (6th ed.). New York: Prentice Hall.
- Madhavan, T., & Theivananthampillai, P. (2005, 11-14 Aug 2005). *Business Process Re-design in Enterprise Systems Projects: Radical and Evolutionary Change*. Paper presented at the Eleventh Americas Conference on Information Systems (AMCIS), Omaha, NE, USA.
- Nadler, D. A., & Tushman, M. L. (2004). Implementing new design: Managing organizational change. In M. L. Tushman & P. Andersen (Eds.), *Managing Strategic Innovation and Change: A Collection of Readings* (2nd ed.). Oxford: Oxford University Press.
- Pfeffer, J., & Salancik, G. B. (1978). *The External Control of Organizations*. New York: Harper and Row.
- Poirier, C. C. (1999). *Advanced Supply Chain Management: How to Build a Sustained Competitive Advantage*. San Francisco, CA: Berrett-Koehler Publishers.
- Poirier, C. C., & Bauer, M. J. (2000). *E-Supply Chain: Using the Internet to Revolutionize Your Business*. San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Porter, M. E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: The Free Press.
- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: The Free Press.
- Porter, M. E. (1996). What Is Strategy? *Harvard Business Review*(November-December).
- Prahalad, C. K., & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review*(May-June), 79-91.
- Spiekermann, S. (2004). *IT System Design (Lecture 8): Introduction to Enterprise Resource Planning (ERP)*. Retrieved 26 July 2005, from [http://www.wiwi.hu-berlin.de/~sspiek/ITSD\\_VL8a.pdf](http://www.wiwi.hu-berlin.de/~sspiek/ITSD_VL8a.pdf)
- Stalk, G., Evans, P., & Shulman, L. (1992, March/April). Competing on Capabilities: The New Rules of Corporate Strategy. *Harvard Business Review*.
- Tan, F. B. (1994). Linking Information Technology to Business Strategy: An Empirical Study. Working Paper. Department of Management Science & Information Systems, University of Auckland.

Tushman, M. L., & O'Reilly III, C. A. (2002). *Winning through Innovation: A Practical Guide to Leading Organizational Change and Renewal*. Boston, Massachusetts: Harvard Business School Press.

Venkatraman, N. (1991). IT-induced business reconfiguration. In M. M. Scott (Ed.), *The Corporation of the 1990s: Information Technology and Organizational Transformation* (pp. 122-158). New York: Oxford University Press.