

# THE VALUE OF MANAGING INFORMATION:

How information management facilitates process improvement in corporations

Sam Berner

March 12, 2002

## 1. Competitive Advantage and Value Chains:

“Competitive advantage is the need and capacity to innovate and upgrade continuously. This process of innovation and upgrading is the source of a nation's, region's or community's wealth,” wrote [Porter](#) (1998). Innovation rings loud on Porter's definition. [Stalk and Hout](#) (1990) argued in their writings that time management and compression in all corporate activities are the most powerful sources of competitive advantage. Fast innovation can enable management to change the whole nature of a business in order to adapt to changing market conditions. It is easy to see how organisational knowledge, learning and knowledge management can have a major impact on this aspect of competition.

The basic tool Porter offers managers is his Five Forces Rule (see Fig. 2): rivalry among existing competitors, the entry into markets of new competitors, the threat of substitutes, the bargaining power of buyers and the bargaining power of suppliers. The first is the central element, around which the other four revolve. “The significance of any strength or weakness a firm possesses is ultimately a function of its impact on relative cost or differentiation [which] in turn stem from industry structure. They result from a firm's ability to cope with the five forces better than its rivals,” ([Porter](#), 1998: 11).

Arising from these two basic types of competitive advantage (cost or differentiation), Porter gives three alternative strategies which a firm can follow:

- Cost Leadership (where it sets out to become the low-cost leader in its industry);
- Differentiation (where it seeks to be unique in some way that customers value); and
- Focus (where it targets niche markets within its industry)

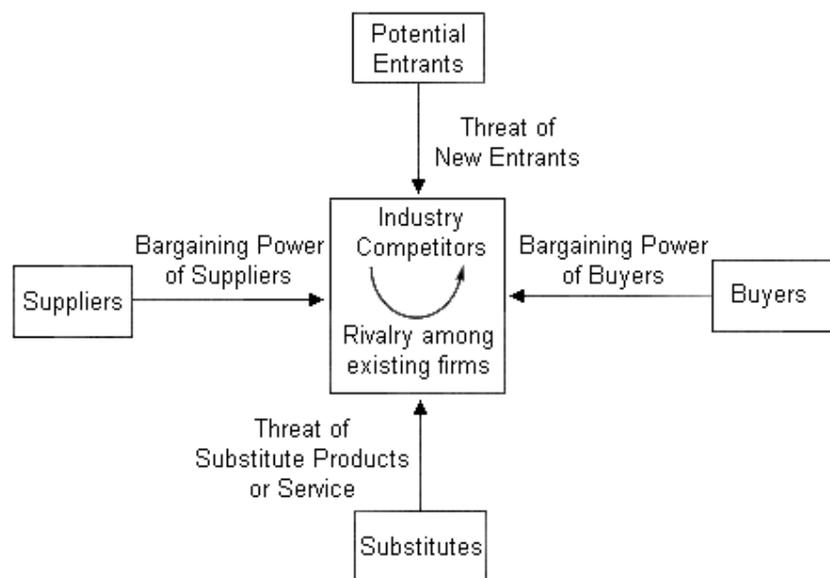


Fig. 1 The Five Competitive Forces

As a mechanism for analyzing the competitive position of a firm's internal operations, Porter introduced the concept of value chains. Here, every single activity within the firm's cycle of production, marketing, delivery, and support can be analysed to show how it interacts with the rest of the cycle. The value chain should reveal the potential for improving both cost and differentiation at an early stage of planning of the product/service. Looking at the firm's link in the chain (see Fig. 2) it again becomes obvious how a good knowledge strategy could enhance both the planning and the execution parts of the process.

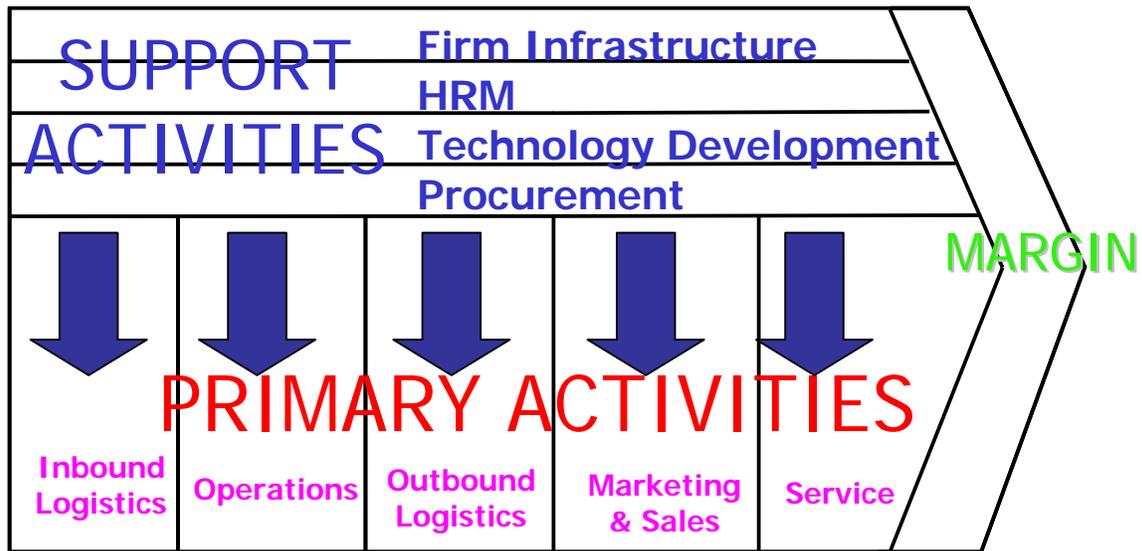


Fig. 2 Firm's link within the Value Chain

## 2. Fitting Information into the Value Chain:

Many of the concepts from Porter's model can be applied to organizations today in another area -- information management. "Value" defines usefulness or importance. "Value chain" is a model for depicting the increasing importance, or value-add, of activities in a process. An "information management value chain," therefore, focuses on the discrete activities that incur costs in order to add value to information. The value proposition is to improve the usefulness of information to the ultimate users, helping them make better decisions ([Cisco and Strong, 1999](#)).

The goal of all management information systems and supporting activities is to provide information that enables better decisions. The value of management information is equal to the increased profitability resulting from the better decisions that it enables. It follows from these principles that the management information activities within a company constitute a Management Information Value Chain (MIVC) whose purpose is to convert raw data to useful information.

[Bide](#) (1998) identifies the following functions in the information value chain:

- creation - data and document based information and other "knowledge" is created and/or acquired
- publication -- the information captured is filtered, structured, indexed, and organized
- aggregation - the "information base" or "knowledge base" is maintained through a series of repositories and/or linkages
- access - the dissemination and/ or presentation of the information
- use - the information is used to support organizational decisions and actions

To a greater or lesser degree, each of these functions adds value to the information ultimately resulting in realised value. Each link in the chain confers elements of branding and authority on the information. Authority has to do with reliability, informed opinion, having status or expertise. Each link in the chain also has a greater or lesser degree of monopoly ([Ball and Wright, 2000](#)).

According to [Haines \(1998\)](#) the Information Value Chain is the “packaging and repackaging of publishing content across multiple business relationships”. Haines sees the new media as an enabling factor in establishing competitive intelligence in companies. However, one is led to question his enthusiasm: in a world where information overload and increased complexity are requiring increasing time and energy input, documents rich in new media shall not necessarily be perceived as improving the information value chain.

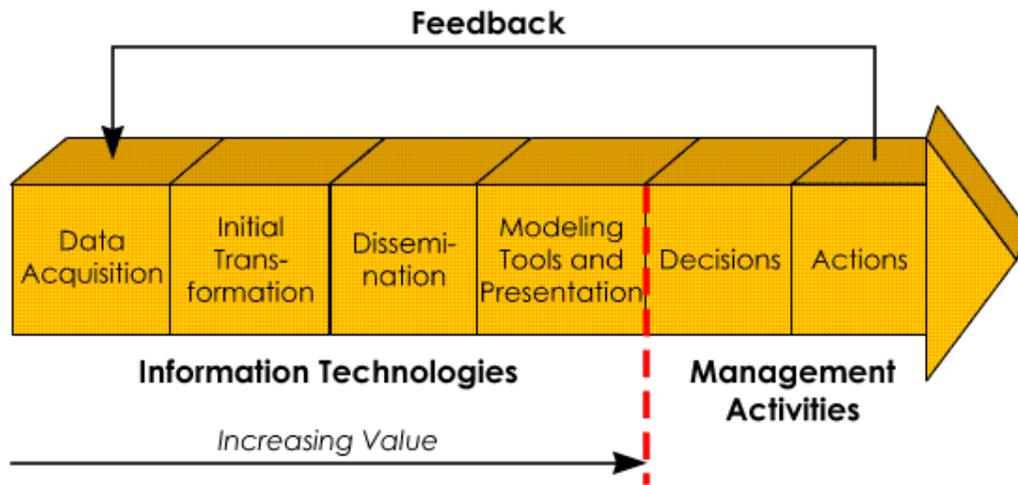


Fig. 3 Elements of the Information value Chain (from [Phillips, 1994](#))

### 3. Managing Documents and Records: definitions, differences and similarities

"Official" records are recorded information in any physical form or medium which are generated or received by a business enterprise as evidence of business decisions and transactions. Examples of documents that are not records are extra copies preserved only for convenience of reference and journal articles. Such "non-records" have their own destruction schedule based on usefulness, and their life cycle must not exceed that of official records of the same type. Educating end users on the distinction between records and non-records is confusing at best and bewildering at worst. The distinction is important for controlling the growth of recorded information ([Cisco and Strong, 1999](#)). This is a rather incomplete (in legal terms) definition of what constitutes a record. With the advent of automation and electronic documents, definitions are going through a re-evaluation stage. Legally speaking, however, a record is a document in any format (paper, microfilm, computer disk, etc.) which contains data or information of any kind; which is created or received and maintained by a local government or agency in the transaction of business, routine activities, and/or legal obligations; and which is maintained as evidence of that transaction, activity, or legal obligation.

The textbook definition of records management is "... the application of systematic and scientific control to all of the recorded information that an organization needs to do business" and the stated objectives of the profession encompass service, economy of costs, and legal and social responsibilities to the organization and individuals it serves ([Robek, Brown, and Maedke, 1987](#)). Arizona State Government defines it in legal terms, "...records management means the creation and implementation of systematic controls for records and information activities from the point where they are created or received through final disposition or archival retention, including distribution, use, storage, retrieval, protection and preservation" ([Arizona State Library, ?](#))

Records management's four goals according to the above are:

- to furnish accurate and complete information when required to manage and operate an organization effectively,
- to process recorded information as efficiently as possible,
- to provide information and records at the lowest possible cost, and
- to render maximum service to the customer (user of information).

Records management is a fundamental activity in the information management value chain. Businesses are slowly beginning to understand that if records management practices and techniques are not integrated into electronic record keeping systems, the systems will eventually fail because of

- inaccurate and/or incomplete records
- Records with no apparent owner and no known purpose for their existence
- Illegible records
- Too many records are obsolete

Webster defines the term "document" as "a writing conveying information a material substance having on it a representation of thoughts by means of some conventional mark or symbol". The Dictionary of Canadian Law defines it as "something which gives you information . . . something which makes evident what would otherwise not be evident . . . the form which the so-called document takes is perfectly immaterial so long as it is information conveyed by something or other; it may be anything, upon which there is written or inscribed information," ([Duklow and Nuse](#), eds., 1994). In IT terms, a document is a repeatable container for a unique body of information identified by a name under which it is stored; a file that contains information that the user can view or hear. It is most often a word processed letter, a picture, a sound byte, or something similar. Documents are usually created and edited using software applications. [Cisco and Strong](#) (1999) state that documents are collections of information -- data, text, graphics, images, voice, and video -- brought together for the purpose of communicating and supporting business decisions and transactions.

The document management challenge is characterized by common elements that are consistent across all organizations: ([Strong](#), 1997)

- Variety of document types -- organizations must define documents and understand their content, value, and use within the organization.
- Variety of life cycle requirements -- organizations must understand the creation, use, storage, and disposition requirements of documents including legal and regulatory compliance.
- Business process integration -- organizations must develop a model for describing document-based tasks and activities within business processes.
- Access requirements -- organizations must define the access requirements for documents at the individual, work group, departmental, and organizationwide level.
- Integration within the computing environment -- organizations must understand the technical implications of deploying the document information resource in the computing infrastructure.

Successful document management is the ability to organize, access, and control document-based information -- paper and electronic. It depends on two components:

(1) an information management business discipline - involves defining business needs for the assembly, control, reuse, distribution, and management of documents throughout their life cycle. To manage documents, it is critical to understand why documents are created, who uses them, and

how they relate to a specific business process or decision activity. This process involves the management of the document content in addition to the media and location.

(2) a set of information technology products and services - includes hardware, software, services, and applications to improve the ability to create, store, retrieve, and control document-based information. Document information technologies should become an integral part of the overall computing environment and should leverage investments made in PCs, servers, networks, communications, and other infrastructure technologies.

Record Management and Document Management are often dealt with in corporations separately. This leads to the situation where no serious integration of corporate information (and therefore corporate expertise, knowledge and memory) occurs, and the information sharing and access stages are severely curtailed. Needless to say, in such scenarios, the information value chain becomes broken and information does not add value to business process.

#### **4. From Information Management to Knowledge Management: still the same value chain:**

Knowledge Management is the collection of processes that govern the creation, dissemination, and utilization of knowledge. In one form or another, knowledge management has been around for a very long time. Knowledge management is not a, "a technology thing" or a, "computer thing" If we accept the premise that knowledge management is concerned with the entire process of discovery and creation of knowledge, dissemination of knowledge, and the utilization of knowledge then we are strongly driven to accept that knowledge management is much more than a "technology thing" and that elements of it exist in each of our jobs.

Knowledge is the full utilization of information and data, coupled with the potential of people's skills, competencies, ideas, intuitions, commitments and motivations. In today's economy, knowledge is people, money, leverage, learning, flexibility, power, and competitive advantage. Knowledge is more relevant to sustained business than capital, labor or land. Nevertheless, it remains the most neglected asset. It is more than justified true belief and is essential for action, performance and adaption. Knowledge provides the ability to respond to novel situations.

Of course no successful knowledge management venture can be put in place unless an integrated information management is there in the first place, fully functional. Whereas it is possible to have an excellent information management system without a KM venture, the opposite is just not possible.

Knowledge adds value to a business through its products, processes and people. The product contribution of knowledge is described by [Davis and Botkin](#) (1994). They describe six features of knowledge-based businesses:

1. The more you use knowledge-based offerings, the smarter they get.
2. The more you use knowledge-based offerings, the smarter you get.
3. Knowledge-based products and services adjust to changing circumstances.
4. Knowledge-based businesses can customise their offerings.
5. Knowledge-based products and services have relatively short life cycles.
6. Knowledge-based businesses enable customers to act in real-time.

Another contribution of knowledge is that in business processes. Throughout industry there are examples of where individuals or departments are ostensibly carrying out the same process, but where the performance levels are quite different. Often it is the 'tacit' knowledge of the experienced person that makes the difference. The sharing of best practices from one part of an organization to another is therefore a key component of many knowledge management programmes. For example, Texas Instruments was able to save the equivalent of the investment in

a new semiconductor fabrication plant, by sharing best practices between their existing plants ([O'Dell](#) 1996). The value of knowledge as manifest in an organisations products, its intellectual capital (such as patents and licences), people (human capital) and processes (structural capital) is very evident when the book value of a company, as measured by traditional accounting methods, is compared with its market value, which takes into account the marketplace perception of intangible value not measured by accountants. For many high-tech companies (such as Microsoft) or knowledge intensive companies (such as biotechnology companies) this factor is ten or more to one. The net result is that as the value and contribution of knowledge becomes more evident, that organisations are investing in initiatives to manage and harness that knowledge. This means a systematic approach to managing the processes for creating and capturing it, classifying it and storing it, disseminating and using it.

### **5. Adding Value through Managing Information:**

Effective information management in a corporation provides the most valuable and scarce resource: time. Automation allows for rich databases filled with customers' likes, dislikes, and precise demographics that help them reduce inventories, the number and length of manufacturing cycles, and assembly costs. Web-based applications permit the customer to access goods and services faster than it was possible before. This adds value to the product, and although it may cost more, customers value their time and convenience even higher. The same automation of B2C applications also permits the removing of middlemen, extra warehousing and show facilities - thus reducing costs in certain instances ([Aldrich](#), 1998).

However, as an Australian Defence Department report warned, "Fully effective management of electronic documents requires consideration of an agency's total information environment. No single medium now holds all the documents relating to an agency's business activities. All sources should be managed in a coordinated way, in a manner appropriate to their environment, in order to preserve and provide access to business documents. Electronic document management systems are more than just systems for tracking the location of electronic documents. Such systems should manage documents for their complete life cycle based on the value of the document to the agency's business. Just as there are standard procedures for the registration of paper documents and records, suitable procedures should be implemented to manage each electronic document throughout its life from creation to disposal" ([ADD](#), 1996). This pre-supposes the commitment and involvement of management, which, unfortunately is often not aware, not interested and not conversant with the procedures involved in records/documents management, and perceives "information" as something that "is there". The task is best addressed by an ISM or an Information Manager, and these have traditionally had very differing roles and perceptions in Australia; the first being "techies" with little understanding of content, and the second (librarians, archivists and records managers) never considered as part of the "management club" and therefore not in a position to make decisions. Their task is being perceived by management as administrative, and therefore an overhead ([St Clair](#), 1994).

A step up the information management hierarchy, management information systems help an organization make better decisions. This distinguishes management information systems from other corporate information systems that automate manual functions, archive information, or communicate with customers. Yet, many companies do not feel that they have achieved sufficient benefits from their systems to justify their investments. Furthermore, some companies have despaired of ever obtaining competitive advantage from their management information systems. In frustration, many have simply given up, choosing to treat their IT departments strictly as cost-centers or placing them outside the organization altogether. Information overload is one of the reasons, while corporate culture issues are following not far behind.

### **6. Examples of Value Adding:**

Harvard University accounting professor Robert Kaplan stated: "Today, the long-term success of organizations comes from their knowledge-based assets-- customer relationships; innovative

products and services; operationally excellent processes; the skills, capabilities, and motivation of their people; and their databases and information systems. Physical assets may be important, but they are unlikely to be as effective a competitive weapon as knowledge assets." (quoted in [Mintz, 2001](#))

The classic example of the use of a company's intellectual assets for competitive edge is Skandia. This Swedish multinational insurance and financial services firm is knowledge intensive, employs approximately 11,000 people and has 5 major divisions. Skandia uses, in addition to the standard book value of the official balance sheet, a new systematised approach to make tangible these hidden values. Factors such as competence base and well managed performance procedures contribute to the total value of a company. Competence base is defined as employees' professional insights, applied experience, and organisational learning. Performance procedures are defined as how customers are handled, and how the operations, processes, business development and logistics are conducted. The more knowledge intensive a company is, the more important are these soft dimensions ([Backleu and Edvinsson, 1999](#)).

While most companies appoint directors of finance and operations and focus company valuation on finance and operations, they lack a function to deal with hidden values. To address this, Skandia created a position that focuses on developing and applying a systematic approach to hidden values. It has a director of intellectual capital. The mission of this function is to identify and improve the visibility of intangible and non material items, to capture and package these items for transfer to users, to cultivate and develop these items through training and knowledge networking, and to capitalize and economize on these items through rapid recycling of knowledge and increased commercialization. The Director of Intellectual Capital at Skandia, is charged with enhancing and systematically developing the intellectual capital of the division. With this approach, Skandia is trying to build more than a "learning organization." AFS strives for an "intelligent organization." This is a dynamic learning and teaching organization that continuously renews its performance. Critical for this development is a federated global organization with competencies and alliances built on intellectual capital, information technology, and leadership around core cultural values.

Other examples of using Intellectual Capital to remain competitive abound. At Hughes Space and Communications (HSC), a subsidiary of Hughes Electronics, one of the key competitive factors has been its ability to bring technological innovation to market while reducing design and development costs to a level that would allow it to expand its customer base. HSC does that by managing its intellectual capital. The main concept was the creation of Communities of Practice. By developing Communities of Practices, HSC enabled business units, projects, and functions to share practices, standards, and sometimes people. HSC supports the Communities of Practices by promoting knowledge-sharing processes such as collaborative conversations, providing collaborative technologies such as groupware and desktop video conferencing, and developing new support roles such as knowledge stewards, Communities of Practice facilitators, and boundary spanners. This led to the ability to create non-standard and highly specialised products on demand quickly and cost-effectively. HSC has improved the exchange of information and has facilitated establishing an inventory of best practices. By utilizing best practice information and removing communication barriers that existed between groups, HSC eliminated some of the repetition involved in project development and design and thereby reduced costs and cycle times. As a result, customers that were once excluded from purchasing satellites due to high telecommunications market entry costs and long payback periods are now able to seek HSC solutions ([Bryan, 1997](#)).

Another example of how Intellectual Chemical can be utilised for competitive advantage is Dow Chemical ([Manasco, 1997](#)). Here, the focus was largely on improving productivity through process innovations and significant cost reductions. Historically, Dow has been slower in bringing products to market than its competitors. In order to address this problem, it reengineered processes; eliminated layers of bureaucracy; and invested in communications, training, and

education tools that would help eliminate knowledge silos. Dow also made significant investments in information technology that integrates customer-based information with the organization's financial accounting systems and its Value-Based Management system. This system has enabled them to segment their markets in detail, giving them access to profitability figures by customer and providing them with information on customer value gain by product. Dow also maintains an elaborate customer technical service system. Finally, it has created a business intelligence group to scan the environment, to observe or predict changes in the applications of their products, to learn about the trends in the technologies surrounding these applications, and to understand where the market is headed.

The third example is General Electric. Before Jack Welch became the CEO in 1981, GE was an insular company. Today, GE has exhaustive processes for identifying best practices from outside the organization because of one of Welch's legacies (Chase, 2001). For example, at the GE training center every class is challenged to go into companies around the world to uncover best practices and apply them to GE. In order to provide greater value to customers while minimizing the company's exposure to risk, GE has become a prolific producer of customer information. In addition to customer insight tools such as surveys, focus groups, and interviews, many formal mechanisms have been implemented to enable GE to respond to individual customer demands as well as changing market conditions. GE also is committed to total quality management systems such as Six Sigma and has created corporate performance systems such as Dashboards and Scorecards for each of its major clients to ensure that quality and service are maintained.

## 7. REFERENCES

- Aldrich, D. 1998. The new value chain. [Online]. Available WWW: <http://www.informationweek.com/700/aldrich.htm>. ↗
- Arizona State Library, Archives and Public Records (?) Arizona Revised Statue § 41-1346.D. [Online] Available WWW: <http://www.dlapr.lib.az.us/records/l-mang.htm> ↗
- Australian Defence Department. (1996) Improving electronic document management: guidelines for Australian Government Agencies. [Online]. Available WWW: <http://www.defence.gov.au/imsc/edmsc/iedmtc.htm>. ↗
- Backlew, M. and Edvinsson, L. (1999) Intellectual Capital at Skandia. [Online] Available WWW: <http://www.fpm.com/cases/el3.html> ↗
- Ball, D. and Wright, S. (2000) "Procuring electronic information: new business models in the context of the supply chain" In **Library Consortium Management: An International Journal**, 2(7): 145-159 ↗
- Bide, M. (1998) Business models for distribution, archiving and use of electronic information: towards a value chain perspective. [Online] Available WWW: <ftp://ftp.cordis.lu/pub/ist/docs/digicult/businessmodels.pdf> ↗
- Bryan, L. (1997) "Stocks Overvalued? Not in the New Economy." In **The Wall Street Journal**, (November 3):A24. ↗
- Chase, R. (2001) 2001 Most Admired Knowledge Enterprises. [Online] Available WWW: [http://www.knowledgebusiness.com/uploads/2001\\_MAKE\\_Summary.pdf](http://www.knowledgebusiness.com/uploads/2001_MAKE_Summary.pdf) ↗
- Cisco, S. and Strong, K. (1999) "The Value Added Information Chain" In **Information Management Journal**, 33(1): 4-12 ↗
- Davis, S. and Botkin J. (1994) "The Coming of Knowledge-Based Business", In **Harvard Business review**, (September-October):165-170 ↗
- Duklow, D. & Nuse, B. (eds.) (1994). *The Dictionary of Canadian Law*. Toronto: Carswell, p. 349 ↗
- Haines, R. "The Information value Chain" In **Electronic Publishing**, 22(9): 36-40 ↗

- Manasco, B. (1997) Dow Chemical Capitalizes on Intellectual Assets. [Online] Available WWW: <http://www.webcom.com/quantera/Dow.html> ↗
- Mintz, S. (2000) "Grey Matters". In **CFO** (01/02/2000) [Online] Available WWW: <http://www.cfo.com/article/1,5309,856%7C17%7CA%7C14%7C1,00.html> ↗
- O'Dell, C. (1996) A current Review of Knowledge Management Best Practice, *Knowledge Management 96 Conference*, Business Intelligence, London (December). ↗
- Phillips, R. (1994) "The Management Information Value Chain" In **Perspective**, (Spring) [Online] Available WWW: <http://www.stern.nyu.edu/~abernste/teaching/Spring2001/MIVC.htm> ↗
- Porter, M. (1998) *The Competitive Advantage of Nations*. London: Macmillan Press ↗
- Robek, M. Brown, G. and Maedke, W. (1987) *Information and Records Management*, Mission Hills, CA: Glencoe Publishing ↗
- Stalk, G. and Hout, T. (1990) *Competing Against Time*. London: Collier Macmillan ↗
- St Claire, G. (1994) *Power and Influence : Enhancing Information Services Within the Organization*. NY: K. G. Saur ↗
- Strong, K. (1997) *Enterprise Document Management: Fact or Fiction.* AIIM White Paper. [Online] Available WWW: [http://www.aiim.org/publications/infoshop/info\\_isr.htm](http://www.aiim.org/publications/infoshop/info_isr.htm) ↗