INFORMATION AS AN ASSET: THE SENIOR MANAGEMENT AGENDA

The importance of information[1] as a key asset continues to grow, following a period where its production, complexity, volume and demand have rocketed, but where satisfaction of the real information needs of the organization has been limited due to many obstacles. Often, this can be

due to a lack of clarity in identifying business-driven requirements. However, the IS/IT strategy process should point to major opportunities from exploiting information. The challenge is to ensure that this information is of the highest quality possible, particularly in terms of timeliness, accuracy, completeness, confidence in source, reliability and appropriateness.

Many organizations are plagued by poor quality information. From his work with telecommunications operator AT&T, Redman[2] found that:

- Many managers are unaware of the quality of information they use and often mistakenly assume that because it is 'on the computer' that it is accurate.
- At an operational level, poor information leads directly to customer dissatisfaction and increased cost. Costs are increased as time and other resources are spent detecting and correcting errors.
- Poor information quality can result in subtle and indirect effects. For example, significant mistrust can ensue when the information from one part of the business, say order entry, that is used by another, perhaps customer billing, is unreliable.
- Inaccurate information makes just-in-time manufacturing and self-managed work teams infeasible. The right information needs to be at the right place at the right time. To illustrate the severity of this problem, one manufacturer was still allowing customers to purchase particular products that it was no longer making via its website.
- Poor information in financial and other management systems mean that managers cannot effectively implement business strategies. Decisions are no better than the information on which they are based.

In addition, a consequence of the Internet has been an explosion in the volume of information that is available to employees. This information is of varying quality, and one of the challenges that organizations face today is assessing this quality. Information from the Net is not subject to any review standards, policies or quality control procedures.

There is also a growing requirement for integration of information flows at individual and departmental/functional levels, and across processes and organizational boundaries, which poses a variety of complex challenges. Communications capability is expanding all the time, as local and wide area networks flourish and the number of external sources of information swell. There is also a stimulus from technology 'push', influenced by the growing availability and improvement in tools such as

middleware, advanced data dictionaries, web design tools, database technologies, and computer assisted software engineering (CASE) tools.

In most instances, effective information management is far from straightforward, and there are many obstacles to navigate:

- Information resides in multiple electronic 'libraries' and proprietary databases and on multiple technical platforms, which are not well integrated or easily accessible. These are the legacy of many years of uncoordinated, evolutionary development, and may result in poor quality and inconsistent presentation.
- Some information is computer-based and well structured, stored in centrally managed databases and applications; some is less structured, and stored in many independent and dispersed PCs or on corporate Intranets; and there is still a huge volume of unstructured and non-automated or unrecorded information.
- Information is created for different purposes by different people at different times and based on differing definitions, resulting in many conflicts and inconsistencies.
- There is both a backlog in meeting information requirements and legacy systems, requiring integration with newly developed and packaged applications.
- Complex information exchanges exist across organizational boundaries, comprising a mixture of electronic, paper-based and verbal communication.

These varying contexts create an 'information ecology'[3] that, if not managed coherently, can seriously undermine organizational performance. Addressing issues relating to information and its management is not a task that can be abdicated outside managerial ranks or delegated to the IS function.

In the UK, the Hawley Committee[4] explored the role of the Board of Directors in managing information. As its starting point, it took the view that information is a significant issue for Boards in fulfilling their responsibilities and is the heart of supervising what an organization does. Members of this Committee highlighted the difficulties they were continuing to experience at Board level in the direction and control of information and information systems. They also highlighted the fact that misuse of information and damage to the systems that hold critical information can seriously harm performance and reputations, and that the Board itself may be hampered in carrying out its duties by poor availability or poor presentation of information.

The Committee developed an agenda for Boards regarding information and its management. While the report says little that is not said

elsewhere, what is new is *who* is saying it. An outline of this agenda is presented in Box 10.1. Tools were also developed by the Committee to support Board members in managing their organization's information resources and a number of these are drawn upon in the chapter.

AN INFORMATION CULTURE

Essential for the success of any information management strategy is the existence of an appropriate 'information culture'.[5] An information culture can be defined as the values, attitudes and behaviours that influence the way employees at all levels in the organization sense, collect, organize, process, communicate and use information. Marchand[6] has identified four common information cultures that exist in organizations today. They are:

- *functional culture*—managers use information as a means of exercising influence or power over others;
- *sharing culture*—managers and employees trust each other to use information (especially about problems and failures) to improve their performance;
- *enquiring culture*—managers and employees search for better information to understand the future and ways of changing what they do to align themselves with future trends/directions;
- *discovery culture*—managers and employees are open to new insights about crisis and radical changes and seek ways to create competitive opportunities.

Each type of culture influences the way employees use information—their information behaviour—and reflects the importance that senior management attribute to the use of information in achieving success or avoiding failure. However, establishing an effective information culture can be a challenge. Davenport captured this point succinctly when he noted that 'effective information management must begin by thinking about how people use information—not with how people use machines'.[7] Changing a company's information culture requires altering the basic behaviours, attitudes, values, management expectations and incentives that relate to information. 'Changing the technology only reinforces the behaviours that already exist.'

Strassmann[8] uses the word 'politics' when considering information management, as he believes that this term, perhaps more aptly than any other, captures what it is really about. He sees information management seeking to answer the same questions as those raised in politics. He

Box 10.1 Information as an asset: the Board Agenda

The Hawley Committee proposed that all significant information in an organization, regardless of its purpose, should be properly identified, even if not in an accounting sense, for consideration as an asset of the business. It asserted that the Board of Directors should address its responsibilities for information assets in the same way as for other assets (e.g. property or plant). This implies a new approach to how information should be treated and requires a Board to make clear to management what actions it wishes to be taken and who is responsible for action and compliance.

The Board should satisfy itself that its own business is conducted so that:

1. the information it uses is necessary and sufficient for its purpose;
2. it is aware of and properly advised on the information aspects of all the subjects on its agenda;
3. its use of information, collectively and individually, complies with applicable laws, regulations and recognized ethical standards.

The Board should determine the organization's policy for information assets and identify how compliance with that policy will be measured and reviewed, including:

4. the identification of information assets and the classification into those of value and importance that merit special attention and those that do not;
5. the quality and quantity of information for effective operation, ensuring that, at every level, the information provided is necessary and sufficient, timely, reliable and consistent;
6. the proper use of information in accordance with applicable legal, regulatory, operational and ethical standards, and the roles and responsibilities for the creation, safekeeping, access, change and destruction of information;
7. the capability, suitability and training of people to safeguard and enhance information assets;
8. the protection of information from theft, loss, unauthorized access, abuse and misuse, including information that is the property of others;
9. the harnessing of information assets and their proper use for the maximum benefits of the organization, including legally protect-

ing, licensing, reusing, combining, re-presenting, publishing and destroying;

10. the strategy for information systems, including those using computers and electronic communications, and the implication of that strategy with particular reference to the costs, benefits and risks arising.

notes that information management is the process by which those who set policy guide those who follow policy. 'Where control over information changes the alignment of power, information politics appears. Whether that turns out to be constructive is something that must be resolved through information management. Who gets what data and who converts data into information? Who balances the competing interests of leaders and followers? Who benefits from the ownership of information?'[9]

Marchand *et al.*[10] have developed the concept of *information orientation* to represent a measure of how effectively a company manages and uses information. Their research indicates that IT practices, information management practices and information behaviours *all* must be strong and working together, if superior business performance is to be achieved. The researchers have developed a methodology to assess information orientation, an overview of which is provided in Box 10.2.

IMPLEMENTING BUSINESS-WIDE INFORMATION MANAGEMENT

A well-managed information resource is arguably as essential as an effective IT infrastructure. Back in the late 1980s, Drucker,[11] in an article titled 'The coming of the new organisation', predicted that the typical organisation of the 21st century would be information based. He claimed it would be flatter, having drastically slimmed down its management size and levels, and would be populated mainly by knowledge specialists, working in fluid interdisciplinary teams. Everyone would be responsible for meeting their own information needs, and the organization as a whole would be required to have a unified vision and an information architecture, and to have abandoned former parochial views on information and its role. His predictions can now be seen to be happening.

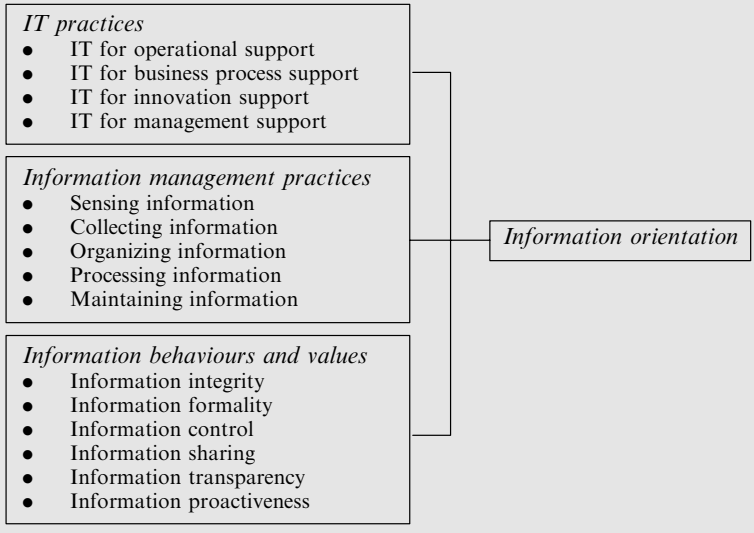
However, promoting the management of information as a corporate resource does not imply building an all-embracing corporate database,

Box 10.2 Information orientation

In their research, Marchand and colleagues* identified 15 specific competencies associated with effective information management and use. They were categorized under three headings:

- *information technology practices*—a company's capability effectively to manage information technology (IT) applications and infrastructure to support operations, business processes, innovation and managerial decision making (four competencies);
- *information management practices*—a company's capability to manage information effectively over the life cycle of information use, including sensing, collecting, organizing, processing and maintaining information (five competencies);
- *information behaviours and values*—a company's capability to instil and promote behaviours and values in its people for effective use of information (six competencies).

The information orientation (IO) of a company measures its effectiveness in managing and using information. IO is calculated by measuring performance across these three categories.



* D.A. Marchand, W. Kettinger, and J.D. Rollins, 'Information orientation: People, technology and bottom line', *Sloan Management Review*, Summer, 2000, 69–80.

Table 10.1 *Establishing the scope and purpose of information management: sample set of questions*

• What is the extent of information that the business is interested in?
• Why does it need the information, and what beneficial impact can be ensured?
• How much of it resides in centrally managed computer systems, dispersed departmental or individual PCs, in paper-based forms or in people's heads?
• How much of it is new or external information, currently not collected?
• Which information is used by a broad cross-section of the business and needs consistent, coherent policies to avoid ambiguity and conflict?
• What information is strategic and linked to strategic applications?
• What high potential information is likely to become strategic?
• When and how can it be delivered, or made accessible, where it will be most useful?
• How can it be verified, and what other information is required to turn it into useful knowledge?
• Which information needs to be integrated across applications, and what technical challenges does this pose?

but does support information independence. True information independence is achieved when there is no relationship between *how* or *where* information is stored and *how* it is accessed and applied by different users. It should be possible to vary requirements without impacting the storage structure or efficiency of information access. Conversely, it should be possible to restructure databases from time to time, without interfering with access demands. This can occur when a business embarks upon a comprehensive migration from one applications environment to another. It may take years and comprise many intermediate stages. It can also occur when organization-wide information needs change, such as when a public utility becomes privatized and is required to focus on commercial dictates and customer demands; or when corporate information management policies or even basic information architectures change in line with business evolution.

From an information management perspective, there are numerous factors that need to be considered, some of which can be deduced from a list of questions outlined in Table 10.1. By answering these and other pertinent questions, a framework for implementing information management can be established. This framework will define:

- a set of objectives and policies for effective information management;
- a program for introducing information management to meet the objectives;

- the creation and maintenance of the information architecture and business or enterprise model;
- what information services should be provided, and how to organize to offer them in the most effective way;
- what implementation issues exist, and how to tackle them.

Objectives of Information Management

The main objective of information management is to satisfy the demand for information, and thus deliver value to the business. This demand is expressed in the information requirements of applications, and the information access and delivery services required by users. Value is delivered through:

- enabling the business to make the right decisions;
- improving the effectiveness of processes and their outcomes;
- providing timely and focused performance information;
- the preservation of organizational memory;
- improving the productivity and effectiveness of managers and staff.

Behind the main objective should be further objectives relating to the quality, cost, accessibility, safety and stability of the information, and others relating to the benefits that can be delivered through shared information, common definitions, an enterprise model covering information and processes, and a modelling capability. These objectives are explored in some detail in the following subsections.

Delivering Value to the Business

Delivering value to the business is the key rationale behind an information management strategy—to add value by exploiting information as a core business resource. In meeting that objective, the potential value of information, especially in the core competitive processes (the primary activities in the value chain), will be harnessed to its fullest extent. While Chapter 5 considered opportunities for gaining strategic advantage through IS/IT, in setting out to manage information, it is presumed that such opportunities have been examined and the information requirements confirmed. This will have been documented clearly in the business IS strategy, along with any other information requirements.

The Hawley Committee developed a framework to help in structuring the value of different types of information asset. Illustrated in Figure 10.1, it can be very useful in reaching agreement among senior business

Types of information asset	Value/Importance defined by		
	Price paid or potentially paid (IPR) less costs	Impact of theft, damage or loss, major errors	Potential to increase revenue or reduce costs
Market and customer information			
Product information			
Specialist knowledge			
Business process information			
Management information and plans			
Human resource information			
Supplier information			
Accountable information			

Figure 10.1 *Mapping the value of information assets (*source: Information as an Asset: The Board Agenda*, KPMG/IMPACT, London, 1994)*

managers as to its impact on business value as well as to the consequences of theft or damage.

Since information needs to be managed in line with its value to the business, it is helpful to 'weight' areas within the total information set, according to their required contribution. A similar portfolio model to that used to categorize applications can be used to rank the information portfolio (Figure 10.2).

Strategic

Information, both internal and external, that is crucial to strategic and competitive business initiatives and principally associated with business drivers, objectives or measures of success, represents the greatest potential value. Some but not all this information may exist within the available information environment in the business. Typical requirements are shown in Table 10.2. These are all business-driven needs, demanding flexible and often high-performance response.

A number of different types of response may be needed to meet strategic information requirements:

- Implementation of newly developed or purchased applications to satisfy new information requirements that cannot be met from existing applications, which provides flexible systems that can be