

Information Planning for Strategic Advantage

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Introduction

The earliest example most often quoted of an organization gaining a strategic advantage from information dates back to the Battle of Waterloo. Rothschilds, the Anglo-French financial family, had substantial investments in both Paris and London prior to the battle and the future value of those investments would depend on the outcome. In order to gain maximum time to 'adjust' their holdings, two homing pigeons were stationed by the battlefield. As soon as the result was beyond doubt the pigeons were sent — one to London bearing a message saying 'Buy' and the other to Paris saying 'Sell'. By the time the news had been carried to the cities by horse, Rothschilds had made their future financial position secure, for some years to come!

No doubt this example could be pre-dated by other anecdotes concerning Normans, Romans, Greeks and even the Chinese! But it does demonstrate that 'gaining strategic advantage from information' is not very new, and not always to do with information technology. Governments spend billions of pounds on espionage activities, spy satellites and the like and undoubtedly companies spend millions of pounds with the same objective of obtaining information others would prefer they did not have!

In every case an effective planning process is involved to identify:

- what information is strategic and what information will become strategic;
- where is it, how it can be obtained, when and how can it be delivered to where it is useful;
- how can it be verified, what other information is required to turn it into useful knowledge, and what it can affect and how it can be used.

That all sounds rather obvious. The problem is that if the organization waits until the answers to the questions are obvious it may well be too late — someone else will have stolen the advantage. Since the value of any item of information is not always apparent when and where it is 'found', a comprehensive information 'map' is required to ensure it is moved to where it can be used to

maximum value, in a context in which it is fully understood.

Given the means that are available today to collect, process, transmit, analyse and store vast quantities of information quickly and precisely, many more opportunities are available for organizations to gain strategic advantages from using well organized information, and that requires planning not just opportunism!

This paper considers the following questions in relation to this planning requirement:

- How have organizations gained strategic advantages from information and what can be learned from analysing those successes?
- How can potential strategic uses of information be identified and what tools, techniques, and processes can help?
- How can the opportunities be evaluated, planned and managed and who is responsible for what?
- What are the key factors for success in strategic information planning?

What must not be forgotten in the 'hype' of information for competitive advantage is the potential 'downside' — the organizations that suffer a disadvantage by failing to appreciate the business leverage information can provide, often because of poor planning (or none at all).

Remember, Rothschilds' competitors could have done the same thing, and the Rothschilds' gain was someone else's loss.

Strategic advantage from information

Much has been written historically about 'information as an asset and resource' and the need for it to be professionally managed as any other business resource (such as people, money, etc.) or asset (customers, machinery, etc.). Most of it has been ignored! Why? Primarily because its value has not been tangibly realizable — turned into profit or even directly related to profitable performance. Information technology has been successfully

applied in *data processing* — automating highly structured information processing tasks such as invoicing, accounting, order processing etc. More recently it has been less successfully applied to provide *management information systems* — less successfully because of the inherently less predictable, less repetitive and less structured tasks performed by managers. Often the information received by managers has been dependent on what is available (information collected as a by-product of data processing systems) rather than what is required, when and in a format that managers can use (ie. exploit as a useful resource/asset). This is improving in terms of the flexibility provided by new software and the improved delivery and presentation media — via office systems using graphics, etc. However, much of this improvement has been the result of local, departmental or individual initiative based on ‘personal computing’, not always linked satisfactorily to the organization’s information resource. Consequently that information resource is being fragmented, making effective overall business exploitation more difficult. Undoubtedly some information is only required locally, but the decisions on this are often being made due to local analysis requirements not business information needs — effectively *data processing driven* — again!

The problems caused by lack of planning of just financial information — the concentration on accounting process rather than financial input to production, marketing or resource management business decision making — are explored in detail in a recent article in *Management Accounting* (‘Financial Information Systems: Asset or Liability’).

Most recently much has been written about using information technology to gain a strategic or competitive advantage. Many of these articles initially were compilations of anecdotes of success, such as American Hospital Supplies, McKesson, Merrill Lynch, Thomsons Holidays, American and United Airlines, etc. Later more analytical appraisals have appeared showing how these advantages have been achieved and how others could analyse their business to find similar opportunities.

These later articles have been more definitive:

- Ives and Learmonth *The Information System as a Competitive Weapon*.²
- Porter and Millar *How Information Gives You a Competitive Advantage*.³
- Ward *An Appraisal of the Competitive Benefits of IT*.⁴
- Rackoff, Wiseman and Ullrich *Information Systems for Competitive Advantage: Implementation of a Planning Process*.⁵

In general they demonstrate that there are three sources of potential advantage in this area, derived from:

1. using information technology;
2. better business information systems;
3. exploiting information to develop the business

A recent book, *The Information Edge*,⁶ examines in depth some 60 examples, most of which show how strategic advantage was gained from effective collection, analysis and use of information.

A conclusion that can be drawn is that while IT enables potential advantages to be gained, few organizations have gained a major sustainable advantage from technology alone. Building better information systems to change the way business is conducted produces longer-term, more sustainable advantages — these require creative business thinking rather than technological innovation.

This is to be expected, given the general availability of technology and its rapid improvements in performance, facilities and economics. The identification, development and implementation of effective systems involving major business changes provides more scope for the able organizations to out-perform and out-manoeuvre the less able. The Ives and Learmonth² article explores these aspects particularly well, but if one wished to be pedantic some of the examples used to demonstrate the role of information systems are actually about exploiting information. For example, ARA Services, a magazine distributor, uses sales information collected to advise retailers on decisions on which magazines they should stock in particular areas. This makes them a better supplier in the eyes of the customer. To achieve this they need IT to collect the data, a well organized system of analysis and segmentation, but they achieved nothing without an understanding of the value such information can add to the service offered by the business.

Many other examples demonstrate the same point — that information collected through IT based systems can be used to achieve business strategic aims, or even be the source of new potential business strategies. Many companies are spending large sums of money on systems to capture information, not only about what is sold but also about who buys what. This will enable them to segment their customers (or end consumers) by understanding their purchasing habits and needs, and hence tailor products and services more specifically and identify new potential products and customer groups. Point-of-sale (POS) systems offer this potential advantage to retailers in addition to the more obvious operational and logistics efficiencies and buying leverage. This is especially true if, like Marks & Spencer, the introduction of POS is coupled with a proprietary credit card service, which gives extensive details about the customer.

Another example of a different type is how Comet, the electrical retailer, is using a model based on ACORN (A Classification Of Residential Neighbourhoods) to identify the best locations for new stores and measure the relative performance of existing stores.⁷

At Cranfield a selection of more than 150 examples of claimed competitive or strategic advantage have been analysed. Two particular aspects of that analysis are considered here in order to provide some answers to the question posed above: How have organizations gained advantages and what can be learned from them?

Classification of claimed examples of strategic advantage

First, it is worth attempting to classify the types of strategic/competitive applications of IS/IT. These can be considered as four types, each having different parameters for success and different implications for strategic information planning.

1. *Linking the organization to its customers or suppliers or consumers of its products or services.* This could be merely a system of terminals in the customer's premises for ordering, enquiry, etc., or more sophisticated systems to help customers to manage their own business — such as McKesson and American Hospital Supplies provide for drugstores and hospitals respectively. ICI developed the 'Counsellor' system to ensure that farmers could get information (and products) directly to help them to improve the yield from their crops. In order to achieve this, the farmer (consumer) has to supply ICI with information about his farm, what he has grown and intends to grow, etc.

In fact, in many of these cases an exchange of information has to occur between the customer and supplier in order to make the link effective. The key people involved are the sales and marketing managers and professionals at one end, and/or the purchasing/receiving/quality control managers, etc. at the supply end. They need not only to plan the ways of interacting with customers and/or suppliers, but also to identify information and how it is or can be used by the supplier or customer or even consumer; i.e. know what information he needs to run his business. Such information must have greater integrity than traditional internal information — other people outside the organization will be making business decisions with it and little advantage will accrue if it is wrong! Systems may well link together between the organization and a number of different customers or suppliers. Chaos will ensue unless the information is understood, defined, even standardized with the other party. This is not easy to achieve if agreement

cannot even be reached internally! Eventually, 'industry standard' definitions will have to be reached as electronic data interchange supersedes paper.

2. *Producing effective integration of the use of information in the organization's value-adding process.* The first type above requires the organization to understand the whole information requirements and flows of its industry, not just its business — the information flowing along the 'value chain' which links the raw material supplies to the consumption of finished products. This will enable demand and supply to be matched throughout the chain and appropriate prices to prevail so that all involved share fairly in the profit to be made, given the various risks undertaken.

Equally, there exists an internal 'value chain' which links the elements of the organization together so that it can supply its customers with required products and services and manage its primary value-adding process profitability. By better management and use of information, functions of the business are co-ordinated more effectively enabling greater value to be produced at lower cost. For instance, 'Telemarketing', as practised by many organizations for routine selling, can dramatically reduce the cost of generating orders. However, imagine the reaction of a good customer to the telephone ringing suggesting a re-order when he has just received a final demand letter from accounts for payment for goods he did not receive to use on a machine that is idle due to a service engineer calling without the right parts! All the relevant information about the customer — sales, service, accounting — is required at the 'point-of-selling' to make it effective.

Another example of internal information integrity is from a building merchant business. As the 'black economy' developed in the 1980s, 'cash' sales increased at the expense of 'trade' (invoiced) sales so that they became a significant proportion instead of a negligible part of overall turnover. Details of cash sales had traditionally not been recorded, but over a period of time it became clear that the buyers were not achieving as good a match between supply and demand because they were purchasing based on only 80 per cent of the sales information. The information base had changed.

Equally, in the same industry one company realized that linking its kitchen design system through point-of-sale to replenishment and unit manufacture would enable it to match demand and supply more effectively and match it to the particular requirements of kitchens in a given area — by size and householders tastes.

Many financial organizations — banks, insurance companies, building societies, etc. — realizing they know little about their customers' overall requirements are now trying to define and build customer-based systems across their many component businesses, and finding, for instance, that they have 20 different definitions of who a customer is — no wonder the average customer is confused at times!

It is self-evident to state that in order to achieve effective use of information in the value-adding process, an understanding of how information is used across business functions is required. Two particular key, purely information-based activities are very important: forecasting (of sales, etc.) and pricing which can only be done effectively by sharing information. Both require effective matching of demand and supply information, plus resourcing and cost factors, as well as competitive intelligence. Pricing opportunities are reviewed very well in an article by Breath and Ives.⁸

3. *Enabling the organization to develop, produce, market and deliver new or enhanced products or services based on information.* The classic example here is the Merrill Lynch 'cash management account', a consumer service which combines cheque, savings and investment facilities. The concept resulted from strategic planning in the corporate planning department, who saw a whole range of financial services converging and realized that managing the information of customers about what are information products could be very lucrative and expand their business. To a lesser extent, Home Banking, pioneered by Nottingham Building Society and the Bank of Scotland, used IT to deliver information products in the home. Equally, Home Shopping services are now developing based on mail order principles.

ICI used the information captured about farms' and farmers' needs to develop more appropriately tailored products — to improve the yield of specific crops, grown on particular soils, in an expected climate. Information about these new products is 'delivered' through the Counsellor system.

A company who provides scaffolding to the construction industry developed a system to calculate a customer's detailed 'bill of materials' requirements from a basic description of the size and type of job. Given that a customer buys a large quantity of poles, joints, planks, etc., they can have a copy of the system for their own use. The system has even been sold to competitors — the secret being that it only works if the originating company's joints are used! This company could be said politely to have never developed the best in data processing,

but an imaginative user saw how information services could enhance their basic product.

The need here is to understand the information content of the product, and/or the information required to make a decision about buying the product, and/or the information required to use the product. 'Warranty' or product insurance is an information-intensive service and can be delivered relatively efficiently using IT — but it requires planning the information which will be relevant over the product life cycle, not just in its sale or purchase.

The Gas Regions once collected details of all the appliances in the UK — during the 1960s for North Sea gas conversion and for many subsequent years they were the only suppliers of gas appliances. The conversion data was discarded in the 1970s and the other data only stored for a few years! Now they want to collect it again in order to make money from servicing and capture long-term replacement business. This longer-term view of the value of holding information to influence future customer behaviour is explored in detail by Ives and Learmonth.²

4. *Providing executive management with information to support the development and implementation of strategy.* Of all the examples considered, fewest fell into this category. With the rapid improvement in two critical features of this type of 'strategic system', however, they are likely to become more important in the 1990s and they are particularly about information rather than systems or technology. Success in this area requires a combination of external information and knowledge as well as good internal information about the business. The availability of both of these — external databases and knowledge-based systems — has made more pertinent executive information systems feasible. In *The Information Edge*⁶ a number of examples of using external data are reviewed, including an organization which linked directly to the PIMS (*Profit Impact of Market Share*) database run by the Strategic Planning Institute in Boston to monitor information about their customers' industries and business performance. Equally, much valuable information once collected is under-exploited because it requires interpretation by experienced, knowledgeable managers and specialists. The potential role of 'expert systems' to enable this by 'tapping the talent' (the knowledge base within the organization) is discussed in some depth in the recent article entitled 'Expert systems — the next challenge for managers'.⁹

A different attitude to information management is implied by this: that we can and should be trying to

identify the ideal information required to run the business (the 'if only we knew . . .' questions). Then the potential external sources can be identified and the possibility of co-ordinating knowledge application through expert systems can be explored. Or can we expect such an approach to succeed? Why not identify all information sources first, select useful ones later — managers' needs will be influenced by what is available; people cannot formulate their 'knowledge requirements' in a vacuum. This all implies that information planning should include the consideration of external sources of business knowledge and many, many such databases already exist, of which management and users and IS people are by and large ignorant.

To summarise at this point, from the analyses of strategic information systems examples four basic classes can be discerned:

1. External linkage to the industry value chain.
2. More effective internal value adding integration.
3. Adding value to the product/service itself.
4. Executive knowledge.

Within each class, information rather than just systems and technology is critical and requires thorough understanding plus good planning (but in each case in different ways, by different people), implying that information planning is not just the task of IS organizations.

Key factors from strategic advantage examples

The second part of the analysis of the examples looked at the factors that seemed to recur in the various claims of successful strategic use of IS/IT and information. Obviously not all the factors apply to all the examples but often the examples display a number of the characteristics below:

1. *External not internal focus* — looking at customers, competitors, suppliers, even other industries and the business's relationships and similarities with the outside business world. Traditionally IS/IT has been focused on internal processes and issues.
2. *Adding value not cost reduction* — although cost reductions may accrue due to business expansion at reduced marginal costs. 'Doing it better, not cheaper' seems to be the maxim. This is consistent with the requirements of companies to differentiate themselves from competitors — better products, better services — to succeed. Historically, IS/IT was seen as a way of increasing efficiency, of doing it cheaper, and while this is obviously important in any business environment it is not the only way to succeed.
3. *Sharing the benefits* — within the organization, with suppliers, customers, consumers and even competitors on occasion! In many cases in the past

systems benefits have not been shared even within an organization, but used instead to give departments or functions leverage over each other. This reduces the benefits and does not allow the benefits to be sustained. Sharing benefits implies a 'buy in', a commitment to success, a switching cost. Almost all the examples involve a sharing of the benefits, with suppliers, customers, consumers, even competitors to provide barriers to entry to the industry. For instance, the introduction of 'debit cards' to replace cheque books depends for its success on sharing some of the reduced processing costs with the retailers and consumers, since the benefits the bank can gain depend on the commitment of retailers and consumers.

4. *Understanding the customer* — and what he does with the product or service, how he obtains value from it, and the problems he may encounter in gaining that value. McKesson followed this principle very closely in providing a range of information-based services to drugstores, starting from a simple problem of stock control which was solved by delivering products in shelf-sized batches. Black and Decker, a low-cost producer, supplied a value-added service to retailers to enable them to 'swap' goods they had over- or under-stocked for the season. They did not *want* returns, but the retailers could not be expected to predict precisely how many lawn mowers, for instance, they would sell. It helped to solve a customer's problem.

5. *Business-driven innovation*, not technology-driven. The pressures of the market place, often interpreted by IS/IT users, caused the developments in most cases. This tends to cast doubt on the idea of 'competitive advantage from IT', but in practice it means that IT (often well established) provides or enables a business opportunity or idea to be converted to reality. The lead or the driving force is to come from the business, not necessarily a traditional route to using IS/IT, which has often been supply-driven, pushed by the IS/IT professionals not pulled through by the users to whom the latest technology is probably of little interest. It makes business sense: why take two risks at the same time, ie. new business process based on new technology — it is a recipe for failure! Considering the last two factors together, Peter Keen summed it up well by saying: 'Major failures in using IT are often based on much better technology and bad business vision. Successes come from good enough technology and a clear understanding of the customer'.

6. *Incremental development*, not the total application vision turned into reality. Many examples show a stepped approach — doing one thing and building on and extending the success by a further development. This implies developing applications by trial and error but also not stopping when a

success is achieved but considering what could be done next. This again is against the traditional notion of clarifying all requirements, defining all boundaries, agreeing the total deliverables of the system before embarking on the expensive, structured process of design and construction, freezing the requirements at each stage. Prototyping of systems obviously has a key role to play here. It also appears that 'failed' prototypes may be just as valuable as successful ones.

7. *Using the information gained from the systems to develop the business.* Many mail order and retailing firms are segmenting their customers according to the purchasing patterns shown by transactions and then providing different, focused, catalogues. Product and market analyses plus external market research information can be merged and then recut in any number of ways to identify more appropriate marketing segmentation and product mix.

A classification of strategic information systems into four groups and a classification of key factors into seven components may not be exactly correct or all that can be done from such an analysis. However, the analysis does suggest that an 'information strategy' should be an equal partner at least with the more fashionable 'information systems strategy' and should come before the very popular 'IT strategy', given where the potential benefits lie!

It might also be prudent to consider 'gaining advantage from information' in balance with 'avoiding disadvantage' since others will undoubtedly be investing to achieve similar benefits. In either case some tools/techniques will be required for management/users and IS people to evaluate the possibilities and implications.

Tools, techniques and processes

Many of these have been mentioned above and are discussed in depth in the articles referenced. EDP Analyser in an edition entitled *Uncovering Strategic Systems*¹⁰ considers most of the following:

- competitive strategy analysis – industry, competitive forces, generic strategy (information intensity of product/service);
- value chain analysis – external and internal;
- customer resource life cycle analysis;
- strategic option generator – targets/thrusts;
- critical success factor analysis.

The first two items derive from Michael Porter's³ ideas on competitive strategy. Customer resource life cycle analysis is considered in detail in Ives and Learmonth's article². Critical success factor

analysis is a well-known approach best described by Rockart and Crescenzi¹¹ and Shank, Boynton and Zmud.¹²

The strategic option generator relating strategic targets (supplier, customer, competitor) to strategic thrusts (differentiation, cost, innovation, growth, alliance) is described in detail in the Rackoff et al article⁵ and in Wiseman's book *Strategy and Computers*.¹³

These are various tools to help in analysis, to appraise situations, to pose pertinent questions, etc. But 'strategy is ultimately a creative process', to quote Michael Porter and therefore is not merely the product of careful application of techniques by professionals! In fact the opposite is often true — the most profitable information strategies are products of intuitive thinking by users (IS amateurs!).

Neither is there one answer — no master strategy — since as applications are developed the situation changes due to what has been done either by the organization or by others in the industry — not just competitors but also customers and suppliers, to change the relative importance of certain elements of information. How each of these tools/techniques can help is outlined briefly below, and how they relate is considered. However, this does not imply there is a 'methodology'.

Each tool or technique examines the use of information in one or more ways:

- as part of the product or service;
- as used to transact business;
- as used to manage and develop the business.

By examining the factors which determine the overall success of the industry and the competing firms the long-term information implications can be determined. Focus will be particularly on the products/services, the balance of power with suppliers and buyers and the executive information requirements. This will also match information strategy to the overall business strategy. A business which pursues a low cost strategy will need different internal systems and use information in different ways from one which is following a value-adding (differentiation) strategy. The use of the various tools and techniques in eliciting different types of strategic information systems and uses is illustrated in Figure 1.

Examining the 'external value chain' — how the component firms in the industry relate in the process of adding value — will again reveal opportunities of types 1, 3 and 4. Examining the 'internal value chain' should identify better ways of carrying out the business and therefore will focus primarily on types 2 and 3 applications — internal

The matrix shows where the techniques are most effective
(the number of ticks attempting to show the varying degrees of emphasis)

Technique \ Application	1. <i>External linkage systems</i>	2. <i>Internal integration</i>	3. <i>Product/service enhancement</i>	4. <i>Executive information</i>
(a) <i>Competitive analysis</i>	↓ ↓ ↓		↓ ↓	↓
(b) <i>Value chain analysis</i>	--- ↓ ↓ ↓ ---	--- ↓ ↓ ↓ ---	--- ↓ ↓ ---	--- ↓ ↓ ---
(c) <i>Customer resource life cycle</i>	↓ ↓ ↓	↓	↓ ↓	
(d) <i>Strategic option generator</i>	↓ ↓ ↓	↓	↓ ↓	
(e) <i>Critical success factors</i>	↓	↓ ↓	↓	↓ ↓ ↓

External
Internal

Figure 1. Tools and techniques

value-adding integration and product/service enhancement. The customer resource life cycle concept focuses on a particular part of the value chain — the relationship with the customer and his use of the product and service — and could be expected to focus on types 1 and 3. Using the strategic option generator approach within the overall value chain will tend to focus attention on types 1 and 3.

In general, the closer to the business you look, the shorter the time scale in which action can be taken, implying internal change can be achieved earlier than external change because the organization has a more influential role and is more in control of the process.

Critical success factors (CSFs) are those things that must be done successfully to achieve the objectives — which implies a short-term focus, probably one to two years. They have a dual role to play: to identify short-term strategic IS requirements from known business objectives and to enable selection of the most immediately relevant ideas generated from the other techniques. As an eliciting technique, being analytical rather than creative, CSFs will tend to produce types 2 and 4 applications — affecting things which are the subject of agreed business objectives.

Generally, therefore, the techniques currently well referenced can be aligned to some extent with the types of strategic IS applications which are currently most common.

However, it should be remembered that many of the best information-based business ideas will not arise from a technique-based examination of the business. They will arise from an intuitive understanding of the business resulting in an innovative idea. But if the business has been analysed using the various techniques discussed, the good idea can be examined in its context more effectively rather than be decided upon in abstract from an understanding of the role of information in the business — an approach will have been established which enables business and information thinking and planning to be readily integrated.

Conclusions and implications for information planning

From the discussion above, a number of conclusions can be drawn:

1. Although a strategy for IT is important, the greater long-term benefits to a business will derive from strategic use of information, based on business-driven systems developments rather than deploying the best technology. A strategy for

business information — its capture, management and coherent exploitation — is an essential part of business strategy. As such, the recent fragmentation of information resources due to localized personal computing may be counter-productive, except that users may better appreciate the value of information. That realization must now be refocused on the business, not just on personal value of information.

2. The information required by the business is not just determined by the business; it is determined by the industry in which the business operates, by its customers and suppliers. Neither is it stable — it cannot be completely modelled since it will change according to changing relationships to the industry, the introduction of new products, new competitors, changing bases of competition. Information planning must reflect this and therefore those who understand the industry are responsible for the business information and its quality and relevance to existing and future needs — business unit and functional managers, especially those close to the outside world. It is their responsibility to ensure that information is taken maximum advantage of by the organization and not allow local, selfish priorities to preclude effective sharing of a business resource.

3. Executive management must not only be aware of the strategic value of information and the potential offered by IS/IT (how many times has it been said?) but also ensure that processes are put in place to enable information planning to be considered an essential part of the business planning process. They must ensure that mechanisms exist which enable information systems and associated infrastructure planning to be an integral part of business planning. Recent surveys show that there is a widespread awareness of the need — but only 10–20 per cent of organizations practice what is preached! Executive management seems more concerned with having a strategy for the long-term investment in technology that is changing too fast to predict than with having a strategy for something more important and that they are more able to influence!

4. How many IS departments/divisions offer an information planning service, or devote resources to planning information, or even have any such skills? Few, if any! IS planning, IT planning, yes, but information? — rarely. 'Data management' and/or 'data administration' functions often exist, but that is like asserting that corporate financial planning is carried out because there is a general accounting department! How can user and executive managers be expected to take the idea of information planning seriously when the 'experts' do not even pretend to?

Before much can be achieved, IS management must appreciate the more strategic role they and their staff should be developing and organize resources and skills to fulfil that role. While information planning may be the responsibility of business managers, enabling them to do it is the IS management responsibility. No financial director would expect line managers to produce financial plans without providing at least guidance on how to do it.

As an overall conclusion, it might be worth reflecting that information planning is something that we do not really know how to do! Given the potential strategic advantages and risks of incurring disadvantages that information offers, however, can organizations afford not to devote time, resources and management commitment to making it happen? A recent report: 'Information management in competitive success',¹⁴ highlights many of the key issues to be resolved in information planning and management (Analysis, chapters 2 and 4, compiled by Griffiths). From the wealth of insight in the discussion, one theme repeats itself — information resource management is an organizational, as opposed to a technical, issue.

A final observation

Peter Drucker, the well-known contributor to management thinking, has very recently written an article entitled 'The Coming of the New Organization'.¹⁵ It might be worth considering the relevance of information planning in the context of his contention that:

We are entering a period of change — a shift from the command-and-control organization, to the information-based organization — The organization of knowledge specialists . . . it is the managerial challenge of the future!

Notes

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